Jeffrey A. Tyler

Fisheries Projections, 307 Old Mountain Road, Farmington, CT 06032, 860/674-9276
Jeffrey.A.Tyler@comcast.net, www.FisheriesProjections.com

Education:

Ph.D. Ecology and Animal Behavior, August 24, 1991, Department of Biological Sciences, State University of New York at Albany, Albany, NY. Advisor: Dr. James F. Gilliam.
Dissertation: Habitat selection and foraging behavior of stream fish: Ideal free models and experiments with blacknose dace, *Rhinichthys atratulus.*

Bachelor of Science, 1984, Biology, Davidson College, Davidson, NC.

Positions:

Director and Chief Scientist, Fisheries Projections, 2/2005-present. Research: Fish population and habitat quality modeling; integrating multidimensional data sets for habitat analysis; analyzing effects of human alteration of the environment on aquatic populations.

Assistant Professor, Worcester Polytechnic Institute, Department of Biology and Biotechnology, 8/1999-7/2005. Research: Fish population biology, ecology and behavior; modeling spatial and temporal dynamics of aquatic ecosystems. Teaching: Population and Community Ecology, Modeling of Biological Systems, Ecological Simulation Modeling, Ecological Management, Principles of Ecology, Introductory Environmental Biology, Advanced Ecology and Evolutionary Bioscience.

Research Scientist, University of Michigan Cooperative Institute for Limnology and Ecosystems Research, and NOAA Great Lakes Environmental Research Laboratory, 10/1997-8/1999. Research: spatial and temporal dynamics of pelagic ecosystems. Mentor: S.B. Brandt

Research Scientist, Great Lakes Center and Adjunct Assistant Professor, Biology Department, Buffalo State College, 9/1994-10/1997. Research: spatial and temporal dynamics of fish populations. Mentor: S.B. Brandt

Postdoctoral Research Associate, Oak Ridge National Laboratory, 9/1991-9/1994. Research: fish population dynamics studies with individual-based and spatially-explicit, individual-based computer simulation models. Mentor: K.A. Rose.

Research Activities:

Grant Support:

Great Lakes Fishery Trust, 3/04-08/07 ($49,000). Modeling spatial and temporal fish habitat use, growth and survival. J.A. Tyler and E.S. Rutherford (co-PIs).

WPI Research Advancement Program, 6/03 ($10,100). Genetic structure of southern New England alewife (*Alosa pseudoharengus*) populations. J. A. Tyler, J. Rulfs, and L. Mathews.

Great Lakes Protection Fund 10/99-11/03 ($115,515). Impacts of watershed fragmentation and restoration on fish habitat, migration and production in Great Lakes tributaries. J.A. Tyler and E.S. Rutherford (co-PIs).

National Science Foundation, 02/97-10/99 ($170,000). Development of a Great Lakes bioenergetics, physiology and behavior laboratory. Investigators: S.B.Brandt (PI), H.J.Carrick, K.J. Hartman, J.Luo, R.J.Snyder, J.A.Tyler.

Great Lakes Center Pilot Research Funding, 10/96 ($3,800). Spatial and temporal dynamics of habitat quality in pelagic zones: interactions between the environment, fish populations and fish behavior. Investigator: J.A.Tyler.

New York Sea Grant, 1/96-12/97 ($263,752). Linking space and time scales of fish production measurements in Lake Ontario: Adding the fourth dimension. Investigators: S.B.Brandt, W.G.Sprules, B.R.Kerman, J.K.Horne, J.A.Tyler (all co-PIs).

Electric Power Research Institute, 10/94 - 12/95 ($15,517). Individual-based models of flatfish populations. Investigator: J.A.Tyler.

Publications:

Tyler, J.A. and Rutherford, E.S. *In Press*. An Individual-Based Modeling Analysis of the Effect of River Restoration Efforts on Steelhead Populations in the Manistee River, Michigan. Transactions of the American Fisheries Society.

Tyler, J.A. and Bolduc, M.B. *In Press*. Individual variation in bioenergetic rates of YOY rainbow trout. Transactions of the American Fisheries Society.

Kracker, L.M., Zhou, L., Jech, J.M., Horne, J.K., Tyler, J.A., Brandt, S.B. 2003. Spatial and temporal structure in fish distributions: A Lake Ontario case study. In: M. Munawar (Ed.), State of Lake Ontario (SOLO): Past, Present and Future. Ecovision World Monograph Series. Backhuys Publishers, Leiden, The Netherlands.

Brandt, S. B., Mason, D. M. McCormick, M. Lofgren, B., Hunter, T. and Tyler, J. A. 2002. Climate Change: Implications for Habitat Quality and Fish Growth Performance in the Great Lakes. American Fisheries Society Symposium 32:61-76.

Tyler, J. A. and Brandt, S. B. 2001. Spatial models of fish habitat quality: Does growth rate potential relate to fish growth? Ecology of Freshwater Fish 10:43-56.

Jager, H.I. and Tyler, J.A. 2001. Movement rules for individual-based models of stream fish. Ecological Modelling 43:245-248.

Walline, P.D., Tyler, J.A., Brandt, S.B., Ostrovsky, I. and Jech, J.M. 2000. Lavnun Abundance: How changes may affect Lake Kinneret's zooplankton. Archive fur Hydrobiolgia Special Issue Advances in Limnology 55:491-511.

Tyler, J. A. 1998. GRP Map Maker: a users guide to spatial models of fish habitat combining acoustic data and bioenergetics models. NOAA technical report #110.

Tyler, J. A. and Hargrove, W.W. 1997. Predicting forager distributions over large resource landscapes: a modeling analysis of the Ideal Free Distribution. Oikos 79:376-386.

Tyler, J. A., and Rose, K. A. 1997. Effects of individual habitat selection in a heterogeneous environment on fish cohort survivorship: a modeling analysis. Journal of Animal Ecology 66:122-136.

Tyler, J. A., Rose, K.A. and Chambers, R.C. 1997. Compensatory responses to decreased young-of-the-year survival: an individual-based modeling analysis of winter flounder. pp. 391-422 in *Early life history and recruitment of fish populations,* R.C.Chambers and E.A.Trippel, eds. Chapman & Hall.

Van Winkle, W., Holcomb, B.D., Jager, H.I., Tyler, J.A., Whitaker, S.Y., Shuter, B.J. 1997. Regulation of energy acquisition and allocation to respiration, growth and reproduction: conceptual framework and examples using rainbow trout. pp. 103-138 in *Early life history and recruitment of fish populations,* R.C.Chambers and E.A. Trippel, eds. Chapman & Hall.

Rose, K.A., Tyler, J. A., Singhdermott, D., DeAngelis, D.L., and Rutherford, E.S. 1996. Multispecies modeling in fish populations. pp. 194-222 in *Computers in fisheries research*, B. Megrey and E. Moksness, eds. Chapman & Hall publishers.

Rose, K. A., Tyler, J. A., Chambers, R.C., MacPhee,G., and Danila, D.J. 1996. Simulating winter flounder population dynamics using coupled individual-based YOY and Leslie matrix models. Canadian Journal of Fisheries and Aquatic Sciences 53:1071-1091.

Tyler, J. A., and Gilliam, J. F. 1995. Ideal free distributions of stream fish: a model and test with minnows, *Rhinichthys atratulus*. Ecology 76:580-592.

Tyler, J. A. and Clapp, D.P. 1995. Perceptual constraints on stream fish habitat selection: effects of food availability and water velocity. Ecology of Freshwater Fish 4:9-16

Chambers, R.C., Rose, K.A., and Tyler, J. A. 1995. Recruitment and recruitment processes of young-of-the-year winter flounder, *Pleuronectes americanus,* at different latitudes: implications of an individual-based simulation model. Netherlands J. Sea Research 34:19-43.

Tyler, J. A., and Rose, K. A. 1994. Individual variability and spatial heterogeneity in fish population models. Reviews in Fish Biology and Fisheries 4:91-123.

Tyler, J. A. 1993. Effects of water velocity, group size, and prey arrival rate on the capture efficiency of stream-drift by *Rhinichthys atratulus*. Canadian Journal of Fisheries and Aquatic Sciences 50:1055-1061.

Manuscripts in Preparation:

Rutherford, E.S., Tyler, J.A. Hinz, L,. And Allen, J.D. Effects of historic changes in river discharge on steelhead populations in three tributaries of Lake Michigan: an individual-based modeling analysis. For submission to Transactions of the American Fisheries Society.

Presentations:

International Association if Great Lakes Research, University Park, PA, May 28-June 1, 2007.
Title: Effect of flow-dependent change in habitat on YOY steelhead populations in a Lake Michiga tributary: results of a multi-modeling approach.
Authors: J.A. Tyler (presenter), M.J. Wiley, E.S. Rutherford, C.M. Riseng, D. Hyndman, D.C. Pijanowski.

American Fisheries Society, Lake Placid, NY, Sept. 11-14 2006.
Title: Steelhead population response to differences in flow regime in the Muskegon River.
Authors: J.A. Tyler (presenter), M.J. Wiley, E.S. Rutherford, L.M. Ivan, C.M. Riseng.

International Association if Great Lakes Research, Windsor, ON, Canada, June 11-14, 2006.
Title: Modeling flow dependent habitat suitability in a Lake Michigan tributary.
Authors: J.A. Tyler (presenter), M.J. Wiley, E.S. Rutherford, L.M. Ivan, M. Ladewig, C.M. Riseng.

Resource Modeling Association Annual Meeting, Arcata, CA, June 13-17, 2005.
Title: Modeling flow-dependent fish habitat in Michigan tributaries: Linking an IBM to hydrologic models.
Authors: J.A. Tyler (presenter), E.S. Rutherford, M.J. Wiley.

Southern New England Chapter, American Fisheries Society, Auburn, MA, Jan 12, 2005.
Title: Variation in respiration: Statistical noise or real individual differences?
Authors: M.B. Bolduc (presenter), J.A. Tyler

American Fisheries Society Annual Meeting, Madison, WI, Aug 23-26, 2004.
Title: Individual variation in steelhead respiration and its effect on predictions of an individual-based model.
Authors: J.A. Tyler (presenter), M.B. Bolduc (student), E.S. Rutherford

American Fisheries Society Annual Meeting, Madison, WI, Aug 23-26, 2004.
Title: Annual variation in habitat-specific contributions of alewife recruits in Lake Michigan.
Authors: T. Hook (student presenter), E.S. Rutherford, D.M. Mason, C.M. Madenjian, J.A. Tyler.

Southern New England Chapter, American Fisheries Society, East Lyme, CT, Jan 21, 2004.
Title: Genetic diversity of alewife populations in southern New England.
Authors: S. Vangala (student presenter), E. Ferreira (student), J. Rulfs, J.A. Tyler.

International Association of Great Lakes Research, Chicago, IL, June 22-26, 2003.
Title: Effects of habitat and population change on steelhead recruitment in the Manistee River: An individual-based modeling analysis
Authors: J.A. Tyler (presenter) E. S. Rutherford

International Association of Great Lakes Research, Chicago, IL, June 22-26, 2003.
Title: Flow variation effects on steelhead recruitment in Michigan tributaries.
Authors: E. S. Rutherford (presenter), J. A. Tyler, L. Hinz

Northeast Estuarine Research Society, Avery Point, CT, Sept. 26-28, 2002.
Title: Environmental quality assessment of Georges Bank for Atlantic cod populations.
Authors: A. M. Sellers (student presenter), J.A.Tyler, J.M.Jech
Winner: Best student poster award.

Ecological Society of America Annual Meeting, Madison, WI, Aug 6-10, 2001.
Title: Effects of habitat alteration on steelhead parr: an individual-based modeling analysis.
Authors: J.A. Tyler (presenter), C.C. Goller (student), E.S. Rutherford

International Association of Great Lakes Research, Green Bay, WI, June 10-15, 2001.
Title: Modeling steelhead parr population responses to management practices.
Authors: J.A. Tyler (presenter), C.C. Goller (student), E.S. Rutherford

Ecological Society of America Annual Meeting, Snowbird, UT, Aug 6-10, 2000.
Title: Modeling restoration of Michigan tributaries and its effect on salmonid populations.
Authors: J.A. Tyler (presenter), E.S. Rutherford

International Association of Great Lakes Research, Cornwall, ON, Canada, May 22-26, 2000.
Title: Modeling the effects of tributary restoration on salmonid production and recruitment in Lake Michigan.
Authors: J.A. Tyler (presenter), E.S. Rutherford

New York Natural History Conference, Albany, NY, April 26-29, 2000.
Title: Lavnun consumption of zooplankton in Lake Kinneret, Israel: potential implications for water quality management.
Authors: J.A. Tyler (presenter), P.D. Walline, M. Gophen.

Ecological Society of America Annual Meeting, Spokane, WA, Aug 9-12, 1999.
Title: Seasonal changes in fish abundance and food consumption in Lake Kinneret, Israel.
Authors: J.A. Tyler (presenter), P.D. Walline, M. Gophen.

Limnology and Lake Management 2000+, Lake Kinneret, Israel, Sept. 6-11, 1998.
Title: Lavnun Abundance: How changes may affect Lake Kinneret's zooplankton. Authors: J.A. Tyler (presenter), P.D. Walline, S.B. Brandt.

American Fisheries Society Annual Meeting, Hartford, CT Aug 17-20, 1998.

Title: Climate Change: Implications for Fish Habitat Quality and Growth Rate Potential.
Authors: S.B. Brandt (presenter), J.A. Tyler.

American Society for Limnology and Oceanography/Ecological Society of America, St. Louis, MO. June 7-12, 1998.
Title: Tracking other trophic levels: spatial distributions of fish and zooplankton in Great Lakes ecosystems.
Authors: J.A. Tyler (presenter), W.G. Sprules, S.B.Brandt.

International Association of Great Lakes Research, Hamilton, ON, Canada, May 18-22, 1998.
Title: Managing competition in Great Lakes fisheries.
Authors: P.D. Walline (presenter), J.A. Tyler, S.B.Brandt.

American Fisheries Society Annual Meeting, Monterey, CA Aug. 24-28, 1997.
Title: Effects of environmental heterogeneity and habitat selection on fish growth.
Authors: J.A. Tyler (presenter), S.B. Brandt

Ecological Society of America Annual Meeting, Albuquerque, NM Aug. 11-14 1997.
Title: Diel changes in spatial distribution of walleye habitat quality.
Authors: J.A. Tyler (presenter), M.E. Terra, S.B. Brandt

International Association of Great Lakes Research, Buffalo, NY June 1-5 1997.
Title: Comparing spatial and temporal measures of salmonid habitat quality in Lake Ontario.
Authors: J.A. Tyler (presenter), D.W.Hondorp, J.K.Horne, J.M.Jech, S.B.Brandt.

International Association of Great Lakes Research, Buffalo, NY June 1-5 1997.
Title: Spatial and temporal variation in walleye habitat quality in Lake Erie: an analysis of food, temperature and light effects.
Authors: M.E. Terra (presenter), J.A.Tyler

Ecological Society of America Annual Meeting, Providence, RI, Aug. 10-14, 1996.
Title: Diel changes in habitat quality for pelagic fishes.
Authors: J.A. Tyler (presenter), S.B.Brandt, D.W.Hondorp, M.E.Terra, J.M.Jech.

International Association of Great Lakes Research Toronto, Canada, May 26-30, 1996.
Title: Spatial and temporal variation in habitat quality: diel effects on growth rate potential.

Authors: J.A. Tyler (presenter), J.M.Jech, M.E.Terra, D.W.Hondorp.

Ecological Society of America Annual Meeting, Snowbird, UT, July 30-Aug. 3, 1995.
Title: Scale dependencies and landscape effects on the ideal free distribution.
Authors: J.A. Tyler (presenter), W.W. Hargrove.

American Fisheries Society Annual Meeting, Halifax, NS, Canada, Aug. 21-24, 1994.
Title: A simple individual-based model of marine flatfish populations: an example using California Halibut.

Authors: J.A. Tyler (presenter), K.A.Rose, R.C.Chambers.

Ecological Society of America Annual Meeting, Knoxville, TN Aug. 7-12, 1994.
Title: Simulating winter flounder population dynamics using coupled individual-based YOY and Leslie matrix models.
Authors: J.A. Tyler (presenter), K.A.Rose, R.C.Chambers.

Larval Fish Conference, St. Andrews, NB, Canada, June 26-28, 1994.
Title: Compensating for chronic stress in the first year of life: an examination using individual-based models of winter flounder.
Authors: J.A. Tyler (presenter), K.A.Rose, R.C.Chambers.

Ecological Society of America Annual Meeting, Madison, WI, July 31-August 4, 1993.
Title: Individual-based model of fish cohort growth, movement, and survival in a spatially-explicit environment.
Authors: J.A. Tyler (presenter), K.A.Rose.

United States Landscape Ecology Symposium, Oak Ridge, TN, Mar. 24-26, 1993.
Title: Habitat selection and population dynamics using individual-based models.
Authors: J.A. Tyler (presenter), K.A.Rose.

International Behavioral Ecology Congress, Princeton, NJ, Aug. 17-22, 1992.
Title: Ideal free distributions of non-identical stream fish: a model and test with minnows.
Authors: J.A. Tyler (presenter), J.F. Gilliam.

National Animal Behavior Society Meetings, Binghamton, NY, June 10-16, 1990.
Title: Ideal free distributions of stream fish: a model and test with minnows, *Rhinichthys atratulus*.
Authors: J.A. Tyler (presenter), J.F. Gilliam.

NE Regional Animal Behavior Society, Providence, RI, Nov. 10-12, 1989.
Title: Habitat selection and distributions of stream fish.
Authors: J.A. Tyler (presenter), J.F. Gilliam.

International Behavioral Ecology Congress, Vancouver, BC, Canada, Oct. 6-9, 1988.
Title: Ideal free distributions of stream fish.
Authors: J.A. Tyler (presenter), J.F. Gilliam.

Invited Seminars:

Kleinschmidt Engineering & Environmental Consulting, Pittsfield, ME, Feb 24, 2005
Kleinschmidt Engineering & Environmental Consulting, Essex, CT, Jan 17, 2005
Alden Laboratory, Holden, MA, Oct 15, 2003
University of Connecticut, Ecology & Evolutionary Biology, Storrs, CT, Dec 27, 2002
College of Holy Cross, Math Department, Worcester, MA, Dec 15, 2002
Great Lakes Protection Fund River Restoration, Archbold, OH, Oct 21, 2002
Trinity College, Biology Department, Hartford, CT, Oct 3, 2002

University of Massachusetts - Amherst, Fish Ecology group, Amherst, MA Dec 13, 2001
Worcester Polytechnic Institute, Biology & Biotechnology, Worcester, MA Oct 30, 2001
Institute For Fisheries Research, Ann Arbor, MI, Jan. 5, 2001.
Marine Biological Laboratory, Woods Hole, MA, Sept. 27, 2000.
Worcester Polytechnic Institute, BIO club, Worcester, MA, March 30, 2000.
Marine Biological Laboratory, Woods Hole, MA, March 15, 2000.
National Marine Fisheries Service, Woods Hole, MA, March 8, 2000.
Worcester Polytechnic Institute, Mathematics Dept., Worcester, MA, Nov. 3 1999.
Worcester Polytechnic Institute, Biology & Biotechnology, Worcester, MA, Feb 25, 1999
US Army Corps of Engineers, Vicksburg, MS, Dec. 16, 1998.
SUNY college of Environmental Science and Forestry, Syracuse, NY, June 23, 1998.
SUNY college of Environmental Science and Forestry, Syracuse, NY, June 22, 1998.
Yigal Allon Kinneret Limnological Laboratory, Tiberias, Israel, Mar. 19, 1998.
University of Maine, Department of Biological Sciences, Orono, ME, April 11, 1997.
University of Maine, Department of Biological Sciences, Orono, ME, April 10, 1997.
SUNY Buffalo, Great Lakes Program, Buffalo, NY, April 7, 1997.
SUNY College of Environmental Science & Forestry, Syracuse, NY, Feb. 15, 1996.
Canisus College, Biology Department, Buffalo, NY, Feb. 12, 1996.
State University of NY at Oswego, Biology Dept., Oswego, NY, July 14, 1994.
University of Tennessee, Zoology Department, Knoxville, TN, Sept. 3, 1993.
University of Kentucky, Department of Biology, Lexington, KY, April 16, 1993.
Ohio State University, Aquatic Ecology Lab, Columbus, OH, Feb. 19, 1993.
Ohio State University, Zoology Department, Columbus OH, Feb. 18, 1993.
VA-Tech chapter of American Fisheries Society, Blacksburg, VA, Feb. 8, 1993.
Virginia Polytechnic Institute, Blacksburg, VA, Feb. 8, 1993.
State University of New York at Albany, Albany, NY, Jan. 22, 1993.
EPRI Smallmouth Bass Workshop, Glen Allen, VA, Nov. 21-24, 1992.
North Carolina State University, Raleigh, North Carolina, Oct. 12, 1992.
NMFS Winter Flounder Workshop, Milford, Connecticut, Jan. 23, 1992.
SW Fisheries Science Center, La Jolla, California, Oct. 18, 1991.
Middlebury College, Middlebury, Vermont, May 15, 1991.
New York State Museum, Albany, New York, April 10, 1991.
New York State Museum, Albany, New York, Dec. 5, 1989.
Skidmore College, Saratoga, New York, Oct. 27, 1989.

Research Interests:

My research interests merge the study of populations, individual behavior, the interaction between the physical and biological environment on individual fitness, and the dynamics and distributions of populations. I am particularly interested in interaction between habitat quality, individual fitness and habitat selection, and how individuals' response to heterogeneous environments affects populations and ecosystems.

Teaching Experience:

Courses Taught:

Worcester Polytechnic Institute:

Ecological Simulation Modeling (BB 4250/542, AY: 01-02, 03-04).
Population and Community Ecology (BB 4150, AY: 00-01, 02-03, 04-05).
Ecological Management (BB 4140, AY: 03-04).
Modeling of Biological Systems (BB 3020, AY: 99-00, 00-01, 02-03, 04-05).
Principles of Ecology (BB 2040, AY: 02-03, 03-04, 04-05).
Environmental Biology (BB 1002, AY: 00-01, 01-02).
Advanced Ecology and Evolutionary Bioscience (BB 577, AY:03-04).

Buffalo State College:
Individual-Based Approaches to Modeling Populations (MAT 699, Spring 1996).
Environmental Biology (BIO 104, Spring 1995).

Awards:

Meritorious Achievement, Advisor of the Major Qualifying Project, *The Effects of Dominance and Social structure on Growth, Respiration and RNA:DNA Ratios in Rainbow Trout*. April 20, 2004. (MQP is equivalent to an undergraduate senior research thesis).

Graduate Student Committees:

Melanie Bolduc, MS, WPI, 2004-2006. (MS Advisor)
Sunita Vengala, MS, WPI, 2003-2003.
Scott Pherson, MS, WPI, 2002-2003. (MS Advisor)
Ana Sellers, MS, WPI, 2000-2002. (MS Advisor)
William Daigle, M.S., WPI, 1999 - 2001.
Darryl Hondorp, M.S., Buffalo State College, 1996-1998.

Undergraduate Research Students:

WPI students:
Biology & Biotechnology MQP (Senior Research Project):
2004-2005: Crystal Bishop, Erin Thompson, Meagan Ward.
2003-2004: Melanie Bolduc, Elizabeth Ferreira, Heather Hinds, Kim Mazza, Kurt Onofrey.
2002-2003: Matthew Bennett.
2001-2002: Shani Anderson, Lauren Barker, Jennifer Burzycki, Julie Cerqueira, David Chervier, David Schoenmann, Nicole Vega.
2000-2001: Matthew Beaton, Stephen Hitchcock, Jonathan Hone, Carlos Goller, Ana Sellers.
IQP (Technology - Society Interaction Research Project):
2003-2004: Paul Ruzalla
2002-2003: Sam Gutmann, Eric Osattin
2001-2002: Daniel Kennedy
2000-2001: Nicole Vega
Advisor for thirteen undergraduate research students over ten semesters including a 1989 winner of the SUNY-Albany Presidential award for excellence in undergraduate research (D.P. Clapp).

<u>Skills/Experience</u>:

Quantitative/Modeling:

Spatial Modeling:

Spatial models of fish bioenergetics: Growth Rate Potential for both static and dynamic models, Maximum Potential Consumption, and Maximum Potential Growth.
Dynamic spatial models of habitat suitability in rivers.
Spatial models of animal distributions over large landscapes.

Simulation model development, parameter estimation, calibration and testing:
Individual based simulation models marine and freshwater fish populations, spatially-explicit models of cohort distribution, growth and survival. See Publications List for specific models developed.
Matrix population modeling.

Computer programming:
Languages: IDL, FORTRAN, Pascal, and BASIC.
Hardware: MS-DOS based PCS, LINXU/UNIX workstations (Dell Precision 670, Compaq, HP, DEC, Sun: Ultra 60, Sunblade, IPC, SPARC 5 and SPARC 20).

Software packages:
Spreadsheets (Quattro, Excel, Lotus 1-2-3), Statistics (SPSS, Statistix, SAS), Graphics (Corel Draw, SigmaPlot, Axum, Lotus Freelance), Word Processing (WordPerfect, Word), Equation Solving (MathCAD, Derive, Eureka), Modelling (Stella).

Theory of fish foraging, habitat selection, and competition:
Ideal Free model of fish distributions.
Tests of models of perceptual constraints on habitat selection.
Light effects on fish reactive distance and foraging.
Effect of foraging success on habitat selection and growth.
Testing Ideal Free Distributions in large landscapes.

Statistical analysis of data:
Multiple, non-linear regression with variable selection.
Model prediction testing and power analysis.

Numerical solutions for non-linear systems.

Field/Laboratory:

Individual tagging and bioenergetic experiments on laboratory reared steelhead (*Oncorhynchus mykiss*), Sept, 2003-May, 2004; Oct, 2004-2005.

RNA:DNA ratio analysis on laboratory reared steelhead, Sept, 2003-May 2004; Oct, 2004-2005.

Adirondack lakes fish population sampling and tagging (collaboration with R.A. Daniels, NY State Museum), May 30-July 2, 2000.

Acoustic sampling of fish distributions in small lakes. North Temperate Lakes Long Term Ecological Research, Trout Lake Station, Boulder Junction, Wisconsin; Chief Scientist. Split-

beam acoustic surveys, temperature and light profiles. Sparkling Lake (Oct.3-6, 1995; Sept. 6-10, 1996), Trout Lake (Sept. 11, 1996).

Continuous measures of fish distributions with a split-beam acoustic mounted on a meteorological buoy moored in the western basin of Lake Ontario, June-Aug. 1996, and May-Oct. 1998.

Research cruises:

Lake Ontario, Oct 15-21, 1997. Split-beam acoustics, trawling (Chief Scientist)
Georgian Bay, Oct. 2-5, 1997. Split-beam acoustics with Optical Plankton Counter in collaboration with W.G. Sprules, Univ. of Toronto.
Lake Erie, Sept. 1-6, 1997. Split-beam acoustics, trawling (Chief Scientist)
Lake Ontario, May 21-29, 1997. Split-beam acoustics, trawling (Chief Scientist)
Lake Erie, Sept. 15 and 22, 1996. Split-beam acoustics, trawling.
Lake Ontario, June 17-21, 1996; August 19-23, 1996. Split-beam acoustics, trawl.
Chesapeake Bay, July 17-23, 1995. Split-beam acoustic survey.
Chesapeake Bay, December 5-9, 1995. Bottom and mid-water trawls; dual-beam acoustic survey.

Hudson River fish survey: Bi-weekly beach seine surveys, June-August, 1990.

Design and construction of a refrigerated, laboratory flow tank for fish foraging and habitat selection experiments.

PADI SCUBA diving certification.

Administrative/Committee:

WPI Biology & Biotechnology Department:

Molecular Ecologist Search Committee, Oct 2002-Feb 2003.
Chair, MQP Award Committee, 2000-2004.
Coordinator, Project Presentation Day, 2000-2004.
Co-Leader, Ecology Discussion Group, 2000-2001.
Summer Fellowship Recommendation Committee, 2000-2001.
Departmental Working Groups
Graduate Student Recruiting Working Group, Chair, 2002-2004.
Graduate Operations Working Group, 2002-2004.
Graduate Curriculum Working Group, 2001-2004, Chair, 2002-2004.
Admissions Working Group, 1999-2002.
Computational Biology Curriculum Working Group, 2000-2004.
Ecology/Environmental Biology Curriculum Working Group, 2000-2004.
Facilities Working Group, 1999-2004.

WPI University Research Thrust Areas:

Environmental Thrust Area, 11999-2004.
Computational Modeling Thrust Area, 1999-2004.

NOAA-GLERL:

Computer Resources Advisory Committee, 10/1997-8/1999.
Science Advisory Committee, 10/1997-8/1999.

Buffalo State College Great Lakes Center:
Coordinator, Imaginative Discussions on the Ecology of Aquatic Systems, 3/1995-10/1996.
Coordinator, Hydroacoustics data and modeling discussions, 9/1995-11/1996.
Coordinator, Research Cruise Personnel and Equipment Scheduling, 4/1996-12/1996.
Research Advisory Council, 12/1994-12/1995.

Graduate student representative for the SUNY-Albany biology department 1988-1989.

Search Committees:
Assistant Professor, Molecular Ecology, WPI Biology & Biotechnology, May 2002-April 2003.
Research Technician, Univ. of Michigan, CILER, March 1999.
Research Scientist, Great Lakes Center, Sept-Oct. 1996.
Research Support Specialist, Great Lakes Center, July-Aug. 1996.
Postdoctoral Research Associate, Oak Ridge National Laboratory, Jan-Feb. 1992.

Service:

University:
WPI Committee for Graduate Studies and Research, May 2003-March 2004
CGSR Secretary September, 2003-March2004.
WPI Sigma-XI, PhD award committee, April, 2001.
WPI Poster presentation, IBM Appreciation Day, October 16, 2000

Academic:
Trinity College Field Station: Educational Development Workshop, August 26-27, 2002.

Community:
CONSERVING TOLLAND, Community Conservation, Tolland, CT. Feb 2003- May 2005
Judge, Mass Academy Science and Engineering Fair, March 17, 2002
ARTS OF TOLLAND, Community Arts, Tolland, CT. December 2002-May 2005.
Rules Judge, Midwest Region, NOAA Ocean Sciences Bowl, February 27, 1999.
Judge, South East Michigan Regional High School Science Fair, November 17, 1997.
Mentor for High school juniors and seniors in a New York State Museum/Rensslear Polytechnic Institute program for high school students. June to August, 1990.

Professional Societies and Journals:

American Association for the Advancement of Science, 1988 - 1997 (*Science*).
American Fisheries Society, 2001 - present (*Fisheries*).
Animal Behavior Society, 1986 - 2000 (*Animal Behaviour*).
British Ecological Society, 1993 - 1998 (*Journal of Animal Ecology*).
Ecological Society of America, 1986 - present (*Ecology* and *Conservation Ecology*).
International Association for Great Lakes Research, 2000 - present (*J. of Great Lakes Research.)*

International Society for Behavioral Ecology, 1985 - 2000 (*Behavioral Ecology*).
Society of American Naturalists, 1984 - 1997 (*American Naturalist*).

Reviewer:

Journals:

American Naturalist (2000)
Canadian Journal of Fisheries and Aquatic Sciences (1997, 1999, 2000, 2004)
Climactic Change (1999)
Copeia (1999)
Ecological Applications (1995, 2002*[2]*)
Ecological Modeling (1998, 2000, 2001)
Ecology (1999)
Ecology of Freshwater Fish (2001, 2002)
Ecologíía Austral {Journal of the Ecological Society of Argentina} (2002)
Environmental Biology of Fishes (2001)
International Council for the Exploration of the Sea {ICES} (2003 *[2]*)
Journal of Animal Ecology (1995)
Journal of Fish Biology (1993)
Journal of Great Lakes Research (2004)
Oikos (1997)
Philosophical Transactions of the Royal Society of London (2002)
Sarsia (1999, 2000)
Transactions of the American Fisheries Society (1996, 2004, 2005).

Guest managing editor, Northerstern Naturalist (2001).

Granting Agencies:

NOAA Sea Grant, Florida (2002)
National Science Foundation, Ecology Program Office (2001)
Environmental Protection Agency, Great Lakes National Program Office (1999).
National Science Foundation, Biological Oceanography (1999).
Great Lakes Fishery Commission (2004).
Great Lakes Research Consortium (1998).
Israel Science Foundation (1998).

References:

Dr. Edward S. Rutherford, Associate Research Scientist, University of Michigan, School of Natural Resources and the Environment, Institute for Fisheries Research, 1109 N. University St. Ann Arbor, MI 48109-1084, (734) 663-6554 x104. Email: edwardr@umich.edu.

Dr. Mike Wiley, Professor, University of Michigan, School of Natural Resources and the Environment, Dana Building, 440 Church St. Ann Arbor, MI 48109-1084. (734) 764-6286. Email; mjwiley@umich.edu.

Dr. Ronald Cheetham, Professor, Department of Biology and Biotechnology, Worcester Polytechnic Institute, 100 Institute Rd., Worcester, MA 01609, (508) 831-5582, FAX: (508) 831-5936. Email: cheetham@wpi.edu.

Dr. J. Michael Jech, Associate Research Scientist, Northeast Fisheries Science Center, 166 Water Str., Woods Hole, MA 02543, (508) 495-2353, FAX: (508) 495-2258. Email: michael.jech@noaa.gov.

Dr. Eric Overström, Chair and Professor, Department of Biology and Biotechnology, Worcester Polytechnic Institute, 100 Institute Rd., Worcester, MA 01609, (508) 831-5582, FAX: (508) 831-5936. Email: ewo@wpi.edu.

Dr. Alex DiIorio, Director, Bioprocessing Center and Research Assistant Professor, Department of Biology and Biotechnology, Worcester Polytechnic Institute, 100 Institute Rd., Worcester MA 01609, (508) 831-5602, FAX: (508) 831-5936. Email: adiiorio@wpi.edu

Dr. Stephen Brandt, Director, NOAA Great Lakes Environmental Research Laboratory, 2205 Commonwealth Blvd., Ann Arbor, MI 48105, (734) 741-2244, FAX: (734) 741-2003. Email: brandt@glerl.noaa.gov.

Dr. Kenneth A. Rose, Professor, Coastal Fisheries Institute, Wetlands Resources Building, Louisiana State University, Baton Rouge, LA 70803-7503, (504) 388-6346, FAX: (504) 388-6513. Email: karose@lsu.edu.

Dr. James F. Gilliam, Professor, Department of Zoology, Box 7617, North Carolina State University, Raleigh, NC, 27695, (919) 515-2589 (Ph.D. advisor). FAX: (919) 515-5327. Email: james_gilliam@ncsu.edu.

Dr. Robert A. Daniels, Senior Scientist, New York State Museum Biological Survey, Ichthyology Lab, 145 Jordan Rd., Troy, NY, 12180, (518) 283-9005, RDaniels@museum.nysed.gov