

DANIEL B. HAYES

CURRICULUM VITA

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EDUCATION: Ph.D. Michigan State University 1990
M.S. Michigan State University 1988
B.S. summa cum laude University of New Hampshire 1983

SPECIALIZATION AND AREAS OF INTEREST

Relationship between fish habitat and their population dynamics; fisheries management; applied statistics and mathematical modeling; community interactions in aquatic and marine ecosystems; applications and consequences for fisheries management; impacts of dams on fish populations and habitats; impact of invasive species

PROFESSIONAL EXPERIENCE

2014-present	Associate Chair, Department of Fisheries and Wildlife, MSU
2007-present	Professor, Michigan State University
2001-2006	Editor, Transactions of the American Fisheries Society
2000-2007	Associate Professor, Michigan State University
1994 - 2000	Assistant Professor, Michigan State University
1990 - 1994	Research Fishery Biologist, National Marine Fisheries Service, Woods Hole, MA
1984 - 1990	Graduate Research Assistant, Michigan State University
1983	Program Manager, Lake Lay Monitoring Program, University of New Hampshire

TEACHING EXPERIENCE

2009 – present	Introduction to Fisheries and Wildlife Lab (FW101L)
2007 - 2014	Statistics for Ecologists (FW324; STT224)
2006, 2007	Population Analysis and Management (FW424)
2006 - present	Field Experience in Fisheries and Wildlife (FW238)
2005	Aquatic Ecosystem Management (FW414)
1997 - 2009	Applied Systems Modeling and Simulation (FW853) odd years
1995,98,04,12	Introduction to data management (FW893)
2005, 2008	Two-day continuing education course “Fish Population Estimation” approved through the American Fisheries Society
2003, 2004,	Two-day continuing education course “Statistical Aspects of Sampling
2006, 2007	Freshwater Fish Populations and Habitats” approved through the American Fisheries Society

1995-present Guest Lecture for numerous classes at MSU, including FW324 (Biometry), FW207 (Great Lakes Biology and Management), FW479 (Fisheries Management), FW205 (Introduction to Fish and Wildlife Management), FW410 (Upland Game Management), FW419 (Applications of GIS to Natural Resource Management) FW205 (Seafood Systems Management), FW474 (Fisheries and Limnology Techniques), FW852 (Introduction to Systems Modeling for Natural Resource Management), STT825 (Sample Surveys), FW416 (Marine Ecosystem Management)

PROFESSIONAL HONORS, AWARDS AND ACHIEVEMENTS

2015 Howard and Lili Ann Camden Endowed Teacher/Scholar Award
 2015 North American Colleges and Teachers of Agriculture Teaching Award of Merit
 1994 Special Accomplishment Award, National Marine Fisheries Service
 1991 Albert S. Hazzard Award, Michigan Chapter American Fisheries Society
 1984-1988 National Science Foundation Graduate Fellowship
 1988 Skinner Memorial Award from American Fisheries Society to attend national meeting in Toronto, Ontario
 1987 Honorable mention best student poster, 1987 American Fisheries Society meeting, Winston-Salem, N. C.

STUDENTS' AWARDS

Seth Herbst 2015 Albert S. Hazzard Award from Michigan Chapter AFS
 Elle Gulotty 2015 Janice Fenske Fellowship
 Darrin McCullough 2015 Robert Ball Fellowship
 Corey Higley 2015 Future Academic Scholars in Teaching (FAST) Fellowship
 Mitch Nisbet 2015 Schrems Scholarship from West MI Chapter of Trout Unlimited
 Mitch Nisbet – Red Cedar Fly Fisher's Scholarship
 Seth Herbst 2014 MI Chapter AFS best student presentation
 Elle Gulotty 2014 Schrems Scholarship from West MI Chapter of Trout Unlimited
 Seth Herbst 2011 Robert Ball Fellowship
 Sherry Martin 2010 Albert S. Hazzard Award from Michigan Chapter AFS
 Corrine Higley 2010 Jan Fenske Fellowship
 Amy Schueller 2009 Albert S. Hazzard Award from Michigan Chapter AFS
 Jon Hansen 2008 Albert S. Hazzard Award from Michigan Chapter AFS
 Amy Schueller 2007 Jan Fenske Fellowship
 Jon Hansen 2007 Paul Young Chapter of Trout Unlimited Research Grant
 Nikki Lamp 2006 Best Student Poster Award, The Wildlife Society Annual Meeting
 Jon Hansen 2006 Schrems Scholarship from West MI Chapter of Trout Unlimited
 Bryan Burroughs 2005 Best Student Paper Award, Michigan Chapter AFS
 Bryan Burroughs 2003 Albert S. Hazzard Award from Michigan Chapter AFS
 Bryan Burroughs 2003 Paul Young Chapter of Trout Unlimited Scholarship
 Bryan Burroughs 2003 Red Cedar Fly Fishers Scholarship
 R. Doug Workman 2002 Best Poster Award, Midwest Fisheries Conference
 Bryan Burroughs 2002 Red Cedar Fly Fishers Scholarship
 Brad Thompson 2002 MI Chapter AFS Best Student Presentation
 Bryan Burroughs 2002 Schrems Scholarship from West MI Chapter of Trout Unlimited
 Brad Thompson 2001 Schrems Scholarship from West MI Chapter of Trout Unlimited
 JoAnna Lessard 2001 Albert S. Hazzard Award from Michigan Chapter AFS
 Jo Latimore 2000 MSU Distinguished Fellowship
 Jo Latimore 2000 3-year Water Sciences Fellowship
 JoAnna Lessard 2000 3-year Water Sciences Fellowship
 Hope Dodd 2000 Albert S. Hazzard Award from Michigan Chapter AFS
 Jo Anna Lessard 2000 Schrems Scholarship from West MI Chapter of Trout Unlimited
 Dave Thomas 2000 Flint River Valley Chapter of Michigan Steelheaders
 Hope Dodd 1999 Best Student Paper Presentation, American Fisheries Society

Ann Krause 1999 Albert S. Hazzard Award from Michigan Chapter AFS
 Jessica Mistak 1999 Lee Wulff Scholarship from Trout Unlimited
 JoAnna Lessard 1999 Michigan Polar-Equator Club Scholarship
 JoAnna Lessard 1999 Fred Waara Scholarship from Waara Chapter of Trout Unlimited
 Jessica Mistak 1999 Schrems Scholarship from West MI Chapter of Trout Unlimited
 Kurt Newman 1998 Skinner Award, American Fisheries Society
 Kurt Newman 1998 Schrems Award from West Michigan Chapter of Trout Unlimited

GRADUATE STUDENTS AS MAJOR PROFESSOR OR CO-ADVISOR

Pamela Petrusso (MS), Kristi Klomp (MS), Anne Krause (MS), Hope Dodd (MS), Kurt Newman (Ph.D.), JoAnna Lessard (MS), Jessica Mistak (MS), David Thomas (MS), Bradley Thompson (Ph.D.), Bryan Burroughs (MS, Ph.D.), Jo Latimore (Ph.D.), Jeremy Price (MS), Matt Klungle (MS), Natalie Waddell (MS), Ed Roseman (Ph.D.), Sarah Thayer (Ph.D.), Rebecca Gannon (MS), Jonathan Hansen (MS), Nancy Schwalm (MS), Amy Schueller (Ph.D.), Dan Wieferich (MS), Sherry Martin (Ph.D.), Corrine Higley (MS, Ph.D.), Seth Herbst (Ph.D.), Jacob Stoller (MS), Jason Smith (MS), Elle Gulotty (MS), Darrin McCullough (MS), Mitch Nisbet (MS), Ryan Andrews (MS), Samantha Stanton (MS), Brandon Bergen (MS)

PROFESSIONAL AND HONORARY SOCIETIES

American Fisheries Society
 Michigan Chapter of the American Fisheries Society
 Natural History Network

OTHER PROFESSIONAL ACTIVITIES

Michigan State University

University Fellowship Selection Committee Meeting 2015-present.
 CANR Teaching and Academic Policy Committee (TAPC) 2014-present; Chair 2016-2017.
 College of Ag. and Nat. Res, Advisory Committee (CAC) 2011-2013; Chair 2012-2013.
 Environmental Science and Policy Program, Program Advisory Group 2004-2013.
 Evaluation and Review Committee, Dept. Of Fish. and Wild. 2003-2007
 Graduate Committee, Dept. of Fish. and Wild. 1999-2002, Chair 2000-2002, Chair 2008-2011
 Curriculum Committee, Dept. of Fish. and Wild. 1997-1999, Chair 1998-1999, 2005-2007
 Biometry Group in the College of Agriculture and Natural Resources 1996-2006
 Chair, Fishery Management Faculty Search Committee, Dept. of Fish. and Wild. 1996-1997
 Sea Lamprey Faculty Search Committee, Dept. of Fish. and Wild. 1996
 Minority Apprenticeship Program 1995-1998

Michigan Department of Natural Resources

Walleye Committee 2015-present
 Lake Sturgeon Management Committee 1994-2015; co-chair 2013-2015
 Mollusk Technical Advisory Committee (Threatened/Endangered Species Review) 2013-Present
 Fish Technical Advisory Committee (Threatened/Endangered Species Review) 2005-Present
 Chair, Resource Inventory Committee 1995-2002

Great Lakes Fishery Commission

Member of Board of Technical Experts (BOTE) 1996-2001

American Fisheries Society

AFS representative to Sustainable Forestry Initiative (SFI) External Review Panel 2005-2011
 Coeditor, Transactions of the American Fisheries Society 2001-2006

Program co-chair for 1998 AFS meeting 1997-1998
 Program Committee 1994-1999
 North-Central Representative to Marine Fisheries Section 1994-2004
 Michigan Chapter Representative to AFS 2000 1995-1999
 North Central Division Awards Committee 1995
 Associate Editor North American Journal of Fisheries Management 1993-1995
 Canadian Concerns Committee 1991-1993

Michigan Chapter of the American Fisheries Society

Program Committee 1999-2001
 Past-President 1998-1999
 President 1997-1998
 President-Elect 1996-1997
 Continuing Education Committee 1997-2002, Chair 1998-2002

Southern New England Chapter of the American Fisheries Society

President-Elect 1993-1994
 Secretary-Treasurer 1992-1993
 Program Development Committee 1992-1993

Northeast Fisheries Science Center

Stock Assessment Review Committee (SARC) 1993
 Sea Scallop Plan Development Team 1991-1993
 Sea Sampling Working Group 1991-1993

National Marine Fisheries Service

Invited member of review panel, Northwest Fishery Science Center's Groundfish Program 2003
 Invited member of national review panel for red snapper fishery 1997

National Sea Grant College Program

Invited member of national review panel for fishery habitat proposals 2000

Environmental Protection Agency

Invited member of EPA STAR Aquatic Systems Ecology Fellowship review panel 2006
 Invited member of national review panel for estuarine indicator program proposals 2000

Gulf States Marine Fishery Commission

Review of GSMFC Fishery Information Network 2001

Sustainable Forestry Initiative External Review Panel

Member, 2005-2011, Vice-Chair 2007-2008

Army Corps of Engineers

Invited member of independent external peer review panel: environmental DNA (eDNA) 2010-11

Bath Township

Park Lake Advisory Board 2010-present, Chair 2014-present

SERVICE AS EXPERT WITNESS

2009-2012. Listed as expert witness by Michigan DNR in case pending regarding Golden Lotus Dam on the Pigeon River, Michigan.

2005-2006. David Fagnilli of Davis & Young, Cleveland, OH for case Dr. Stephen Luczek, et al. V. Granite Development Partners, L.P., et al. Cuyahoga County Court of Common Pleas, Case No.: 526940. Written expert witness testimony and in-court testimony was provided regarding the potential impacts of upstream development on a reservoir.

2002-2003. University of Pittsburgh Environmental Law Clinic, Tom Buchele, Esq. EHB Docket No. 2001-138-R, Consolidated with 2001-139-R 2001-140-R; 2001-157-R 2001-158-R and 2001-159-R. Written expert witness testimony was provided regarding impact of in-stream gravel mining in the Allegheny and Ohio Rivers in the vicinity of Pittsburgh, PA. Case was settled out of court.

PEER-REVIEWED PUBLICATIONS

89. **Hayes, D.B.**, and M.J. Monfils. 2016. Occupancy Modeling of Bird Point Counts: Reply to Latif et al. *Journal of Wildlife Management*. 80: 195-196.
88. Herbst, S. J., B.M. Roth, **D.B. Hayes**, and J.D. Stockwell. 2016. Walleye Foraging Ecology in an Interconnected Chain of Lakes Influenced by Non-Native Species. *Transactions of the American Fisheries Society* 145: 319-333.
87. Herbst, S.J., B.S. Stevens, **D.B. Hayes**, and P. Hanchin. 2016. Estimating Walleye (*Sander vitreus*) movement and fishing mortality using state-space models: implications for management of spatially structured populations. *Canadian Journal of Fisheries and Aquatic Sciences*: 73: 330–348. DOI 10.1139/cjfas-2015-0021
86. Stoller, J., **D. Hayes**, and B. Murry. 2016. Effects of a rock-ramp fishway on summer fish assemblage in a Lake Huron tributary. *Fisheries Management and Ecology* 23: 407–417.
85. Herbst, S. J., B.M. Roth, **D.B. Hayes**, and J.D. Stockwell, 2015. Walleye foraging ecology in an interconnected chain of lakes influenced by nonnative species. *Transactions of the American Fisheries Society* 145: 319-333.
84. Monfils, M. J. P.W. Brown, **D.B. Hayes**, and G.J. Soulliere. 2015. Post-breeding and Early Migrant Bird Use and Characteristics of Diked and Undiked Coastal Wetlands in Michigan. *Waterbirds* 38: 373-386.
83. **Hayes, D. B.**, and M.J. Monfils. 2015. Occupancy modeling of bird point counts: implications of mobile animals. *Journal of Wildlife Management* 79: 1361–1368.
82. **Hayes, D. B.**, and B. E. Thompson. 2014. Movement rules for juvenile steelhead: dynamic linking of movement behaviour to habitat and density. *Ecology of Freshwater Fish* 23: 581-593.
81. **Hayes, D.B.**, B. J. Bellgraph, B. M. Roth, D. D. Dauble, and R.P. Mueller. 2014 Timing of Redd Construction by Fall Chinook Salmon in the Hanford Reach of the Columbia River. *River Research and Application* 30: 1110–1119. DOI: 10.1002/rra.2719.
80. Kiraly, I.A., Coghlan S. M. Jr., Zydlewski, J. and **D. Hayes**. 2014. An Assessment of Fish Assemblage Structure in a Large River. *River Research and Applications* DOI: 10.1002/rra.2738
79. Kiraly, I.A., Coghlan S. M. Jr., Zydlewski, J. and **D. Hayes**. 2014. Comparison of Two Sampling Designs for Fish Assemblage Assessment in a Large River, *Transactions of the American Fisheries Society*, 143: 508-518

78. **Hayes, D. B.** Burroughs, and B. Thompson. 2014. Resource Management in the Face of Uncertainty. Pages 267-271 in W. Taylor, A. Lynch, N. Leonard, eds. *Future of Fisheries: Perspectives for Emerging Professionals*. American Fisheries Society, Bethesda, MD.
77. Monfils, M. J., P. W. Brown, **D. B. Hayes**, G. J. Soulliere, and E. N. Kafkas. 2014. Breeding Bird Use and Wetland Characteristics of Diked and Undiked Coastal Marshes in Michigan. *Journal of Wildlife Management*. 78(1):79–92; 2014; DOI: 10.1002/jwmg.637.
76. Irwin, B.J., T. Wagner , J. R. Bence , M. V. Kepler, W. Liu and **D. B. Hayes**. 2013. Estimating Spatial and Temporal Components of Variation for Fisheries Count Data Using Negative Binomial Mixed Models. *Transactions of the American Fisheries Society* 142: 171-183.
75. Wagner, T., B.J. Irwin, J. R. Bence and **D. B. Hayes**. 2013. Detecting Temporal Trends in Freshwater Fisheries Surveys: Statistical Power and the Important Linkages between Management Questions and Monitoring Objectives. *Fisheries* 38:7, 309-319, DOI: 10.1080/03632415.2013.799466
74. Wieferich, D. J., **D.B. Hayes**, and D.G. McCullough. 2013. Evaluation of Digital Photography for Quantifying *Cryptococcus fagisuga* (Hemiptera: Eriococcidae) Density on American Beech Trees. *Journal of Economic Entomology*, 106(3):1324-1330.
73. Hansen, J. and **D. B. Hayes**. 2012. Long-Term Implications of Dam Removal for Macroinvertebrate Communities in Michigan and Wisconsin Rivers, United States. *River Research and Applications* 28: 1540-1550.
72. Bence, J. R., and **D. B. Hayes**. 2012. Integrating statistical methods and results into your writing. Pages 65-87 in *Scientific Communication for Natural Resource Professionals*, C. A. Jennings, T. E. Lauer, and B. Vondracek, eds. American Fisheries Society, Bethesda, MD.
71. **Hayes, D. B.** 2012. Issues affecting fish habitat in the Great Lakes Basin. Pages 51-80 in *Great Lakes Fisheries Policy and Management: a Binational Perspective* , 2nd edition, W. W. Taylor, A. J. Lynch, and N. J. Leonard, eds. Michigan State University Press, East Lansing, MI.
70. **Hayes, D. B.**, C. P. Ferreri, and W. W. Taylor. 2012. Active fish capture methods. Pages 267-304 in A. V. Zale, D. L. Parrish, and T. M. Sutton, editors. *Fisheries Techniques*, 3rd edition, American Fisheries Society, Bethesda, MD.
69. Martin, S.L., **Hayes, D. B.** Rutledge, D. T., and Hyndman, D. W. 2011. The land-use legacy effect: adding temporal context to lake chemistry. *Limnology and Oceanography* 56: 2362-2370.
68. Schueller, A. M., and **D. B. Hayes**. 2011. Inbreeding and Allele Retention for Lake Sturgeon Populations under Different Supplementation Strategies. *North American Journal of Fisheries Management* 31:1133-1145.
67. Schueller, A.M., and **D.B. Hayes**. 2011. Minimum viable population size for lake sturgeon using an individual based model of demographics and genetics. *Canadian Journal of Fisheries and Aquatic Sciences* 68: 62-73.
66. Wieferich, D, **D. B. Hayes**, D. McCullough, and N. Schwalm. 2011. Distribution of American Beech (*Fagus grandifolia*) and Beech Scale (*Cryptococcus fagisuga* Lind.) in Michigan from 2005 to 2009. *Northern Journal of Applied Forestry* 28: 173-179.

65. Tabor, R. A., K. L. Fresh, R. M. Piaskowski, H. A. Gearns, and **D. B. Hayes**. 2011. Habitat use of juvenile Chinook salmon in the nearshore areas of Lake Washington: effects of depth, lakeshore development, substrate, and vegetation. *North American Journal of Fisheries Management* 31:700–713.
64. Burroughs, B. A., **D. B. Hayes**, K. D. Klomp, J. F. Hansen, and J. Mistak. 2010. The Effects of the Stronach Dam Removal on Fish in the Pine River, Manistee County, Michigan. *Transactions of the American Fisheries Society* 139:1595–1613.
63. Schueller, A. M., and **D. B. Hayes**. 2010. Sensitivity of lake sturgeon population dynamics and genetics to demographic parameters. *Transactions of the American Fisheries Society* 139:521-534.
62. Thompson, B. E., and **D. B. Hayes**. 2010. Estimating bioenergetics model parameters for fish with incomplete recapture histories. *Canadian Journal of Fisheries and Aquatic Sciences*. 67: 1075–1085.
61. Burroughs, B. A., **D. B. Hayes**, K. D. Klomp, J. F. Hansen, and J. Mistak. 2009. Effects of Stronach Dam removal on fluvial geomorphology in the Pine River, Michigan, United States. *Geomorphology* 110: 96-107.
60. Pratt, T., L. M. O'Connor, A. G. Hallett, R. L. McLaughlin, C. Katopodis, **D. B. Hayes**, and R. A. Bergstedt. 2009. Balancing aquatic habitat fragmentation and control of invasive species: enhancing selective fish passage at sea lamprey control barriers. *Trans. Am. Fish Soc.* 138:652–665.
59. Claramunt, R.M, Kolb, T.L., Clapp, D.F., **Hayes, D.B.**, Dexter, J. L. Jr., Warner, D.M., C.P. Madenjian. 2009. Effects of increasing Chinook salmon bag limits on alewife abundance: implications for Lake Michigan management goals. *North Am. J. of Fish. Mgt.* 29:829-842.
58. Hamer, G. L. , U. D. Kitron, T. L. Goldberg, J. D. Brawn, S. R. Loss, M. O. Ruiz, **D. B. Hayes** and E. D. Walker. 2009. Host selection by *Culex pipiens* mosquitoes and West Nile Virus amplification. *American Journal of Tropical Medicine & Hygiene* 80(2): 268–278.
57. **Hayes, D. B.**, Michael Jones, Nigel Lester, Cindy Chu, Susan Doka, John Netto, Jason Stockwell, Bradley Thompson, Charles K. Minns, Brian Shuter, and Nicholas Collins. 2009. Linking fish population dynamics to habitat conditions: insights from the application of a process-oriented approach to several Great Lakes species. *Reviews in Fish Biology and Fisheries* 19:295-312.
56. Latimore, J.A., and **D. B. Hayes**. 2008. The vigor-organization-resilience concept of ecological health: lessons from temperate warmwater stream fish communities. Pages 1807-1813 in J. L. Nielsen, J. J. Dodson, K. Friedland, T. R. Hamon, J. Musick, and E. Verspoor, editors. *Reconciling fisheries with conservation: proceedings of the Fourth World Fisheries Congress*. American Fisheries Society, Symposium 49, Bethesda, Maryland.
55. **Hayes, D. B.**, H. R. Dodd, and J. L. Lessard. 2008. Conservation considerations for small dams on cold-water streams. Pages 1791-1806 in J. L. Nielsen, J. J. Dodson, K. Friedland, T. R. Hamon, J. Musick, and E. Verspoor, editors. *Reconciling fisheries with conservation: proceedings of the Fourth World Fisheries Congress*. American Fisheries Society, Symposium 49, Bethesda, Maryland.
54. Wagner, T., J. R. Bence, M. T. Bremigan, **D. B. Hayes**, and M. Wilberg. 2007. Regional trends in fish mean length at age: components of variance and the statistical power to detect trends. *Canadian Journal of Fisheries and Aquatic Sciences* 64: 968-978.

53. Thayer, S. A., W. W. Taylor, **D. B. Hayes**, and R. C. Haas. 2007. Weight of evidence for underlying dynamics of yellow perch in Saginaw Bay, Lake Huron. *Ecological Modeling* 206:31-40.
52. Hansen, M., D. Beard, and **Hayes, D. B.**. 2007. Sampling and experimental design. Pages 51-120 in Guy, C., and M. Brown (eds.) *Analysis and interpretation of freshwater fisheries data*. American Fisheries Society, Bethesda, MD.
51. **Hayes, D. B.**, J. Bence, T. Kwak, and B. Thompson. 2007. Abundance, biomass and production. Pages 327-374 in Guy, C., and M. Brown (eds.) *Analysis and interpretation of freshwater fisheries data*. American Fisheries Society, Bethesda, MD.
50. Bellgraph, B. J., B. E. Thompson, **D. B. Hayes**, and T. S. Riley. 2006. Growth of age-0 steelhead (*Oncorhynchus mykiss*) and brook trout (*Salvelinus fontinalis*) in the Pine River watershed, Alcona county, Michigan. *Journal of Freshwater Ecology* 21:687-692.
49. Kratzer, J. F., **D. B. Hayes**, B. E. Thompson. 2006. Methods for interpolating stream width, depth, and current velocity. *Ecological Modeling* 196:256-264.
48. Roseman, E.F., W.W. Taylor, **D.B. Hayes**, A.L. Jones, and J.T. Francis. 2006. Predation on walleye eggs by fish on reefs in Western Lake Erie. *Journal of Great Lakes Research* 32:415-423.
47. Wagner, T., **D. B. Hayes**, and M. T. Bremigan. 2006. Accounting for multilevel data structures in fisheries data using mixed models. *Fisheries* 31:180-187.
46. McLaughlin, R. L., L. Porto, D. L. G. Noakes, J. R. Baylis, L. M. Carl, H. R. Dodd, J. D. Goldstein, **D. B. Hayes**, and R. Randall. 2006. Effects of low-head barriers on stream fishes: taxonomic affiliations and morphological correlates of sensitive species. *Canadian Journal of Fisheries and Aquatic Sciences* 66:766-779.
45. Thomas, D., and **D. Hayes**. 2006. A comparison of fish community composition of headwater and adventitious streams in a coldwater river system. *Journal of Freshwater Ecology* 21: 265-275
44. Roseman, E. F., W. W. Taylor, **D. B. Hayes**, J. T. Tyson, and R. C. Haas. 2005. Spatial patterns emphasize the importance of coastal zones as nursery areas for larval walleye in Western Lake Erie. *Journal of Great Lakes Research* 31 (Supplement 1) 28-44.
43. **Hayes, D. B.**, W. W. Taylor, and K. Smith. 2004. Ecological and Socioeconomic factors influencing fisheries sustainability. Pages 15-27 in Knudsen, E., D. D. MacDonald, and Y. K. Muirhead, editors. *Sustainable management of North American fisheries*. American Fisheries Society, Symposium 43, Bethesda, Maryland.
42. Klungle, M. M., and **D. B. Hayes**. 2004. Can placement of whole trees in rivers restore habitat for fish? (Michigan). *Ecological Restoration* 22:304-305.
41. Workman, R. D., **D. B. Hayes**, and T. G. Coon. 2004. Spawning habitat selection by rainbow trout in the Pere Marquette River, Michigan. *Journal of Great Lakes Research* 30: 397-406.
40. Wills, T. C., M. T. Bremigan, and **D. B. Hayes**. 2004. Variable effects of habitat enhancement structures across species and habitats in Michigan reservoirs. *Transactions of the American Fisheries Society* 133:398-410.

39. **Hayes, D.**, E. Baker, R. Bednarz, D. Borgeson, Jr., J. Braunscheidel, J. Breck, M. Bremigan, A. Harrington, R. Hay, R. Lockwood, A. Nuhfer, J. Schneider, P. Seelbach, J. Waybrant, and T. Zorn. 2003. Developing a standardized sampling program: the Michigan experience. *Fisheries* 28(7): 18-24.
38. Mistak, J. L., **D. B. Hayes**, and M. T. Bremigan. 2003. Food habits of coexisting salmonines above and below Stronach Dam in the Pine River, Michigan. *Environmental Biology of Fishes* 67(2): 179-190
37. McLaughlin, R. L., J. E. Marsden, and **D. B. Hayes**. 2003. Achieving the benefits of sea lamprey control while minimizing effects on nontarget species: conceptual synthesis and proposed policy. *Journal of Great Lakes Research* 29(Supplement 1): 755-765.
36. Dodd, H.R., **D. B. Hayes**, J.R. Baylis, L.M. Carl, J.D. Goldstein, R.L. McLaughlin, D.L.G. Noakes, L.M. Porto, and M.L. Jones. 2003. Low-head lamprey barrier effects on stream habitat and fish communities in the Great Lakes Basin. *Journal of Great Lakes Research* 29(Supplement 1): 386-402.
35. **Hayes, D. B.**, J. R. Baylis, L. M. Carl, H. Dodd, J. Goldstein, R. L. McLaughlin, D. L. G. Noakes, and L. Porto. 2003. Biological effect of low-head lamprey barriers: designs for extensive surveys and the value of incorporating intensive process-oriented research. *Journal of Great Lakes Research* 29(Supplement 1): 373-385.
34. Lessard, J. L., and **D. B. Hayes**. 2003. Effects of elevated water temperature on fish and macroinvertebrate communities below small dams. *River Research & Applications* 19:721-732.
33. Inman, R. L., H. H. Prince, and **D. B. Hayes**. 2002. Avian communities in forested riparian wetlands of southern Michigan, USA. *Wetlands* 22:647-660.
32. Taylor, W.W., **D.B. Hayes**, C.P. Ferreri, K.D. Lynch, K.R. Newman, and E.F. Roseman. 2002. Integrating landscape ecology into fisheries management: a rationale and practical considerations. pages 366-389 in *Integrating landscape ecology into natural resource management*, J. Liu and W. W. Taylor, editors. Cambridge University Press, Cambridge, England.
31. Roseman, E. F., W. W. Taylor, **D. B. Hayes**, J. Fofrich, Sr., and R. L. Knight. 2002. Evidence of walleye spawning in Maumee Bay, Lake Erie. *Ohio Journal of Science* 102:51-55.
30. Workman, R. D., **D. B. Hayes**, and T. G. Coon. 2002. A model of steelhead movement in relation to water temperature in two Lake Michigan tributaries. *Transactions of the American Fisheries Society* 131:463-475.
29. Krause, A. E., **D. B. Hayes**, J. R. Bence, C. P. Madenjian, and R. M. Stedman. 2002. Measurement error associated with surveys of fish abundance in Lake Michigan. *Journal of Great Lakes Research* 28:44-51.
28. McLaughlin, R. L., L. M. Carl, T. Middel, M. Ross, R. G. Randall, D. L. G. Noakes, **D. B. Hayes**, J. R. Bayliss. 2001. Potentials and pitfalls of integrating data from diverse sources: lessons from a historical database for Great Lakes stream fishes. *Fisheries*. 26(7):14-23.
27. Roseman, E.F., W.W. Taylor, **D.B. Hayes**, R.L. Knight, and R.C. Haas. 2001. Removal of walleye eggs from reefs in western Lake Erie by a catastrophic storm. *Transactions of the American Fisheries Society* 130:341-346.

26. Petrusso, P. A., and **D. B. Hayes**. 2001. Invertebrate drift and feeding habits of juvenile chinook salmon in the Upper Sacramento River, California. *California Fish and Game* 87(1):1-18.
25. Petrusso, P. A., and **D. B. Hayes**. 2001. Condition of juvenile chinook salmon in the Upper Sacramento River, California. *California Fish and Game* 87(1):19-37.
24. **Hayes, D. B.** 2000. A biological reference point based on the Leslie Matrix. *Fishery Bulletin* 98:75-85.
23. Roseman, E.F., W.W. Taylor, **D.B. Hayes**, R.C. Haas, D.H. Davies, and S.D. Mackey. 1999. Influence of physical processes on the early life history stages of walleye (*Stizostedion vitreum*) in Western Lake Erie. Pages 43-54 in *Ecosystem Approaches for Fisheries Management*. University of Alaska Sea Grant, AK-SG-99-01, Fairbanks. 756 pp.
22. Newman, K. R., **D. B. Hayes**, and W. W. Taylor. 1999. The effect of urbanization on fish community structure in a large Michigan watershed. Pages 467-479 in *Ecosystem Approaches for Fisheries Management*. University of Alaska Sea Grant, AK-SG-99-01, Fairbanks. 756 pp.
21. **Hayes, D. B.** 1999. Issues affecting fish habitat in the Great Lakes Basin. Pages 209-237 in *Great Lakes fishery policy and management: a binational perspective*, W. W. Taylor and C. P. Ferreri, editors. Michigan State University Press, East Lansing, MI.
20. **Hayes, D. B.**, W. W. Taylor, and P. A. Soranno. 1999. Natural Lakes and large impoundments. Pages 589-621 in *Inland fisheries management in North America*, 2nd edition, C. Kohler and W. Hubert, editors. American Fisheries Society, Bethesda, MD.
19. Roseman, E.F., W.W. Taylor, **D.B. Hayes**, R.L. Knight, and R.C. Haas. 1999. The Demise and Rehabilitation of Walleye in Lake Erie. *Sustainable Lake Management: Proceedings of the Eighth International Conference on the Conservation and Management of Lakes*, Volume 2:S15B-11.
18. Becerra-Muñoz, S., **D.B. Hayes** and W.W. Taylor. 1999. Stationarity and rate of dampening of modeled indices of fish abundance in relation to their exploitation status in the Northwest Atlantic Ocean. *Ecological Modelling* 117: 225-238.
17. **Hayes, D. B.**, and P. A. Petrusso. 1998. The role of tributaries in the sustainability of Great Lakes fisheries. *Fisheries* 23(7):42-43.
16. **Hayes, D. B.**, W. W. Taylor, M. T. Drake, S. M. Marod, and G. E. Whelan. 1998. The value of headwaters to brook trout (*Salvelinus fontinalis*) in the Ford River, Michigan, USA. Pages 175-185 in *Headwaters: water resources and soil conservation*. M. J. Haigh, J. Krecek, G. S. Rajwar, and M. P. Kilmartin, editors. Oxford and IBH Publishing Co., New Delhi.
15. **Hayes, D. B.**, and J. K. T. Brodziak. 1997. Reply: Efficiency and bias of estimators and sampling designs for determining length-weight relationships of fish. *Canadian Journal of Fisheries and Aquatic Science* 54:744-745.
14. Jones, M. L., R. G. Randall, **D. B. Hayes**, W. Dunlop, J. Imhof, G. Lacroix, and N. J. R. Ward. 1996. Assessing the ecological effects of habitat change: moving beyond productive capacity. *Canadian Journal of Fisheries and Aquatic Science*. 53 (Suppl. 1): 446-457.
13. **Hayes, D. B.**, C. P. Ferreri, and W. W. Taylor. 1996. Active fish capture methods. Pages 193-

- 220 in Fisheries Techniques, B. R. Murphy and D. W. Willis, editors. American Fisheries Society, Bethesda, Maryland.
12. Roseman, E. F., W. W. Taylor, **D. B. Hayes**, R. C. Haas, R. L. Knight, and K. O. Paxton. 1996. Walleye egg deposition and survival on reefs in western Lake Erie (USA). *Annales Zoologici Fennici* 33:341-351
 11. **Hayes, D. B.**, C. P. Ferreri, and W. W. Taylor. 1996. Linking fish habitat to their population dynamics. *Canadian Journal of Fisheries and Aquatic Science* 53 (Suppl. 1): 383-390.
 10. Ferreri, C. P., W. W. Taylor, and **D. B. Hayes**. 1995. Evaluation of age-0 survival and its effect on lake trout rehabilitation in the Michigan waters of Lake Superior. *Journal of Great Lakes Research* 21(Supplement 1) 218-224.
 9. **Hayes, D.B.**, W.W. Taylor, and H.L. Schramm, Jr. 1995. Predicting the biological impacts of competitive fishing. *North American Journal of Fisheries Management* 15:457-472.
 8. **Hayes, D.B.**, J.K.T. Brodziak and J.B. O'Gorman. 1995. Efficiency of estimators and sampling designs for determining length-weight relationships. *Canadian Journal of Fisheries and Aquatic Science* 52:84-92
 7. Helser, T. E., and **D. B. Hayes**. 1995. Providing quantitative management advice from stock abundance indices based on research surveys. *Fishery Bulletin* 93:289-297.
 6. **Hayes, D.B.**, and W.W. Taylor. 1994. Changes in the composition of somatic and gonadal tissues of yellow perch following white sucker removal. *Transactions of the American Fisheries Society* 123:204-216.
 5. **Hayes, D. B.** 1993. A statistical method evaluating differences between age-length keys with application to Georges Bank haddock, *Melanogrammus aeglefinus*. *Fishery Bulletin* 91:550-557.
 4. **Hayes, D. B.**, W. W. Taylor, and E. L. Mills. 1993. Natural lakes and large impoundments. Pages 491-513 *in* C. Kohler and W. Hubert editors. *Inland Fisheries Management in North America*. American Fisheries Society, Bethesda, MD.
 3. **Hayes, D. B.**, W. W. Taylor, and J. C. Schneider. 1992. Response of yellow perch and the benthic invertebrate community to a reduction in the abundance of white suckers. *Transactions of the American Fisheries Society* 121:36-53.
 2. **Hayes, D. B.**, and W. W. Taylor. 1991. A multiple-regression technique for analyzing stomach contents in fish. *Transactions of the American Fisheries Society* 120:396-400.
 1. **Hayes, D. B.**, and W. W. Taylor. 1990. Reproductive strategy in yellow perch (*Perca flavescens*): effects of diet ontogeny, mortality, and survival costs. *Canadian Journal of Fisheries and Aquatic Science* 47:921-927.

BOOK REVIEWS

- Hayes, D. B.** 1995. Review of "Scaling Fisheries: the science of measuring the effects of fishing, 1855-1955". *Transactions of the American Fisheries Society* 124:786-787.

PUBLISHED REPORTS

Wehrly, K.E., **D.B. Hayes**, and T.C. Wills. 2015. Status and Trends of Michigan Inland Lake Resources, 2002-2007. Fisheries Division Fisheries Report 08. Lansing, MI.

Wills, T.C., T.G. Zorn, **D.B. Hayes**, and K.E. Wehrly. 2015. Status and Trends of Michigan Stream Resources, 2002-2007. Fisheries Division Fisheries Report 09. Lansing, MI.

PAPERS PRESENTED (Only papers since 2013 listed; 165 presentations 1986-2012)

Hayes, D.B., and M.J. Monfils. 2015. Occupancy Modeling of Bird Point-Counts: Implications of Mobile Animals. 75th Midwest Fish and Wildlife Conference, Indianapolis, IN. 8-11 Feb, 2015.

Smith, J.B., M.T. Bremigan, and **D. B. Hayes**. 2015. Anticipating Possible Effects of Angler Effort Levels, Winter Spearing, and Climate Change on Lake St. Clair Muskegon: A Modeling Approach. 75th Midwest Fish and Wildlife Conference, Indianapolis, IN. 8-11 Feb, 2015.

Smith, J., **D.B. Hayes**, and M.T. Bremigan. 2015. Anticipating Possible Effects of Angler Effort Levels, Winter Spearing, and Climate Change on Lake St. Clair Muskegon: A Modeling Approach. MDNR Fisheries Division Joint Walleye, Trout, and Esocid Committee meeting 9-10 March 2015.

Herbst, S.J., B.M. Roth, **D.B. Hayes**, and J.P. Stockwell. 2015. Walleye Foraging Ecology in an Interconnected Lake Chain Influenced by Non-Native Species. MDNR Fisheries Division Joint Walleye, Trout, and Esocid Committee meeting 9-10 March 2015.

Watson, J.M., Coghlan, S.M. Jr., J. Zydlewski, **D.B. Hayes**, and I. Kiraly. 2015. Dam removal and fish passage improvement influence fish assemblages in the Penobscot River, Maine. American Fisheries Society Meeting, August 2015.

Murry, B., A. Ania, J. C. Boase, A.S. Briggs, J. Chiotti, C. Fullard, T.L. Galarowicz, **D.B. Hayes**, J. Leonardi, G. Madel and J. Stoller. 2015. Evaluation of a Naturalized Rock Ramp Fish Passage for Cool- and Warm-Water Fish in a Tributary of Saginaw Bay, Lake Huron. American Fisheries Society Meeting, August 2015.

Gulotty, E., and **D. Hayes**. 2015. Effects of Artificial Habitat Structures on Fluvial Geomorphology and Trout Distribution. American Fisheries Society Meeting, August 2015.

Herbst, S.J., B.M. Roth, **D.B. Hayes**, and J.P. Stockwell. 2015. Walleye Foraging Ecology in an Interconnected Lake Chain Influenced by Non-Native Species. American Fisheries Society Meeting, August 2015.

Murry, B., A. Ania, J. C. Boase, A.S. Briggs, J. Chiotti, C. Fullard, T.L. Galarowicz, **D.B. Hayes**, J. Leonardi, G. Madel and J. Stoller. 2015. Evaluation of a Naturalized Rock Ramp Fish Passage for Cool- and Warm-Water Fish in a Tributary of Saginaw Bay, Lake Huron. Michigan Aquatic Restoration Conference, October 2015.

Hayes, D.B. 2015. Dams: A Ubiquitous Landscape Feature Affecting Fisheries. Global Conference on Inland Fisheries — Freshwater, Fish, and the Future: A Cross-Sectoral Conference to Sustain Livelihoods, Food Security, and Aquatic Ecosystems. FAO Headquarters, Rome, Italy. 26-28 January 2015.

- J. Watson, S. Coghlan, Jr., J. Zydlewski, **D. Hayes**, and I. Kiraly. 2015. Fish Community Changes Associated With Dam Removal in the Penobscot River, Maine. U Maine Freshwater Symposium
- Hayes, D.B.**, and M.J. Monfils. 2015. Occupancy Modeling of Bird Point-Counts: Implications of Mobile Animals. 75th Midwest Fish and Wildlife Conference, Indianapolis, IN. 8-11 Feb, 2015.
- Smith, J.B., M.T. Bremigan, and **D. B. Hayes**. 2015. Anticipating Possible Effects of Angler Effort Levels, Winter Spearing, and Climate Change on Lake St. Clair Muskellunge: A Modeling Approach. . 75th Midwest Fish and Wildlife Conference, Indianapolis, IN. 8-11 Feb, 2015.
- Watson, J.M., Coghlan, S.M. Jr., J. Zydlewski, **D.B. Hayes**, and I. Kiraly. 2015. Dam removal and fish passage improvement influence fish assemblages in the Penobscot River, Maine. American Fisheries Society Meeting, August 2015.
- Murry, B., A. Ania, J. C. Boase, A.S. Briggs, J. Chiotti, C. Fullard, T.L. Galarowicz, **D.B. Hayes**, J. Leonardi, G. Madel and J. Stoller. 2015. Evaluation of a Naturalized Rock Ramp Fish Passage for Cool- and Warm-Water Fish in a Tributary of Saginaw Bay, Lake Huron. American Fisheries Society Meeting, August 2015.
- Gulotty, E., and **D. Hayes**. 2015. Effects of Artificial Habitat Structures on Fluvial Geomorphology and Trout Distribution. American Fisheries Society Meeting, August 2015.
- Herbst, S.J., B.M. Roth, **D.B. Hayes**, and J.P. Stockwell. 2015. Walleye Foraging Ecology in an Interconnected Lake Chain Influenced by Non-Native Species. American Fisheries Society Meeting, August 2015.
- Hayes, D., B. Burroughs**, and B. Thompson. 2014. Resource Management in the Face of Uncertainty. American Fisheries Society Annual Meeting, Quebec City, August 17-21, 2014.
- Fullard, C. D. J., B. A. Murry, T. Glaraowicz, G. Madel, M. Haas, **D. Hayes**, J. Stoller, and J. Chiotti. Preliminary findings of round goby predation by smallmouth bass above and below an impoundment on the Cass River, Michigan. 2013 Meeting of the Michigan Chapter of the American Fisheries Society. Gaylord, MI, February 20-21, 2013.
- Herbst, S.J., **D.B. Hayes**, P.A. Hanchin, and B.M. Roth. 2013. Walleye movement dynamics and implications for population estimation in Michigan's Inland Waterway. Annual Meeting of the Michigan Chapter of the American Fisheries Society Feb. 19-21, 2013 Gaylord, MI.
- MacWilliams, R. D., S. Herbst, B. M. Roth, **D. B. Hayes**, M. T. Bremigan. Sources and limitations of larval walleye production in a heterogeneous waterway in northern Michigan. Michigan Chapter Meeting of The American Fisheries Society: Gaylord, Michigan. February 19th-21st 2013.
- MacWilliams, R. D., S. Herbst, B. M. Roth, **D. B. Hayes**, M. T. Bremigan. Sources and limitations of larval walleye production in a heterogeneous waterway in northern Michigan. Graduate Student Organization Symposium. February 22nd 2013.
- Stoller, J., **D. Hayes**, B. Murry, T. Galarowicz, M. Haas, G. Madel, C. Fullard. 2013. "Effects of a rock ramp fishway on summer fish assemblage in the Shiawassee River". Michigan Chapter AFS Annual Meeting, Gaylord, MI. February 19-21, 2013.
- Fullard, C.D.J., B.A. Murry, T. Galarowicz, G. Madel, J. Stoller, M. Haas, **D. Hayes**, and J. Chiotti. Characterizing changes in energy pathways leading to centrarchid top predators resulting from the

round goby invasion of Saginaw Bay tributaries. American Fisheries Society 143rd Annual Meeting. Little Rock, AK, September 8-12, 2013.

Hayes, D., B. Roth, and B. Bellgraph. 2013. Modeling Salmon Spawn Timing with Dynamic Modeling and Statistical Fitting. Statistics in Application: International Year of Statistics. Michigan State University, October 1, 2013.

AD HOC REVIEWER

Canadian Journal of Fisheries and Aquatic Science
Transactions of the American Fisheries Society
North American Journal of Fisheries Management
National Science Foundation
Department of Commerce - National Oceanic and Atmospheric Administration
Michigan Sea Grant
Great Lakes Fishery Commission

GRANTS RECEIVED, AUTHORED, OR LISTED IN

Grantor	Dates	Amount	Title	-
Michigan DNR	2015-2017	\$139,771	Production of Wild Potadromous Salmonids in tributaries to the Manistee River	
Michigan DNR	2015-2017	\$126,783	Effects of flow reduction on thermal dynamics of streams: improving an important link in Michigan's Water Withdrawal Assessment Tool (WWAT) (lead PI with Dr. Troy Zorn)	
Michigan DNR	2014-2017	\$44,954	Distribution of invasive crayfish in Michigan and an assessment of risks they pose to ecosystem health (with Dr. Brian Roth and Dr. Michael Jones)	
Michigan DNR	2014-2017	\$136,605	Impact of fish habitat structures on fluvial geomorphology, fish habitat and trout populations in the North Branch of the Au Sable River.	
Great Lakes Fish and Wildlife Restoration Act	2011-2013	\$97,402	Evaluating marsh bird habitat use at multiple scales to inform conservation design (lead PI –Dr. Michael Monfils, with B. Potter, Gregory Soulliere, and Benjamin Kahler).	
Great Lakes Fishery Trust	2010-2013	\$259,163	Evaluating the success of new rock ramp fish passages and prioritization of tributaries for barrier removals in the Saginaw Bay watershed (with Dr. Brent Murray, CMU)	
Michigan DNR	2011-2015	\$399,497	Evaluation of walleye in Michigan's Inland Waterway (with Dr. Brian Roth and Dr. Mary Bremigan)	
MI Dept.of Natural Resources Fisheries Division	2006-2009	\$50,000	A statewide survey of Michigan's licensed anglers (with Dr. Frank Lupi)	

Michigan State University	2006-2008	\$65,000	Environmental Statistics and Modeling (with Dr. James Bence)
Great Lakes Fishery Trust Fund	2006-2009	\$110,372	Evaluation of lake sturgeon rehabilitation strategies using an individual-based model of demographics and genetics
USDA	2006-2008	\$71,800	Development of a Natural Resources Field Institute: Shaping Future Professionals through Experiential Learning and Teaching (lead PI- Dr. Graham Hickling)
USDA Forest Service	2004-2006	\$74,000	Distribution and spread of beech scale (jointly with Dr. Deborah McCullough and Dr. Mike Walters)
MI Dept. of Natural Resources Forestry	2004-2006	\$76,000	Distribution and spread of beech scale in Michigan (jointly with Dr. Deborah McCullough and Dr. Mike Walters)
Great Lakes Fishery Commission	2002-2004	\$164,000	A performance evaluation of fishways at sea lamprey barriers and controlled modifications to improve fishway performance (Lisa O'Connor, PI)
Michigan DNR	2002-2005	\$102,500	Evaluation of the addition of whole trees to the Au Sable and Manistee Rivers
Michigan State University	2000-2004	\$1,465,693 \$ 131,000	MSU Watershed Management Initiative (Dr. Scott Witter, PI) Aquatic Biological Assessment (Hayes component)
USDA McIntire-Stennis	2000-2003	\$ 30,600	Effects of watershed forest cover on stream habitat conditions and population dynamics of juvenile steelhead
Michigan Dept. of Natural Resources	2000-2003	\$160,000	Evaluation of habitat improvement structures in impoundments along the Au Sable River system (Dr. Mary Bremigan, PI)
Michigan Dept. of Natural Resources	1999-2001	\$ 93,412	Effects of an electric sea lamprey barrier on Pere Marquette steelhead and longnose suckers (jointly with Dr. Thomas Coon)
Great Lakes Fishery Commission	1999-2001	\$135,780	Effect of an electric lamprey barrier on the migratory behavior of steelhead in the Pere Marquette River, Michigan (jointly with Dr. Thomas Coon)
Michigan Dept. Of Natural Resources	1999-2003	\$253,000	Pine River habitat evaluation

Michigan Dept. of Natural Resources	1998-2000	\$50,000	Impact of hydropower facilities on water quality: an assessment of observed effects and potential for impacts in new facilities
Michigan Sea Grant	1997-2000	\$140,000	Physical and biological processes affecting Lake Erie walleye recruitment
Great Lakes Fishery Commission	1996-2001	\$182,250	Linking habitat supply to fish community objectives using a population dynamics approach (jointly with Dr. Michael Jones)
Great Lakes Fishery Commission	1996-1999	\$336,000	Effects of low-head barriers on stream fish communities: magnitude and mechanism of impact (jointly with Dr. David Noakes and Dr. Jeffrey Bayliss)
Michigan Dept. Of Natural Resources	1996-1997	\$51,891	Effects of an electric lamprey barrier and fish ladder on movements of adult sea lamprey, steelhead, and other fish species (jointly with Dr. Thomas Coon)
Michigan Sea Grant	1995-1997	\$95,300	A holistic approach to sustaining the Great Lakes recreational salmonid fishery (jointly with Dr. James Bence).
Michigan Agricultural Experiment Station	1995-1997	\$170,000	Response of fish and wildlife macro-habitat to changes in land use and land cover (jointly with Dr Jack Liu and Dr. Richard Groop)
Michigan Dept. Of Natural Resources	1995-2007	\$500,000	Impact of removal of Stronach Dam, Manistee County, Michigan
Michigan Dept. Of Natural Resources	1995-1997	\$45,000	Historical structure and function of the Muskegon, Manistee, and Au Sable River basins
Michigan Dept. Of Natural Resources	1995-1997	\$15,000	Development of a geographic information system (GIS) for the Au Sable, Manistee, and Muskegon River watersheds
U.S. Bureau of Reclamation	1994-1997	\$100,000	Food abundance, feeding and condition of young-of-year chinook salmon in the Upper Sacramento River
Michigan Dept. of Natural Resources	1984-1990	\$80,000	Competitive interactions between white sucker and yellow perch (Dr. William Taylor, PI)
United States Geological Survey	1984-1988	\$50,000	Effects of lake hydrology on zooplankton community structure (Dr. William Taylor, PI)
United States Env.	1987	\$159,000	Effects of acidification on fish communities

Protection Agency

in the Upper Peninsula of Michigan (Dr. William
Taylor, PI)