

David “Bo” Bunnell

Curriculum Vitae

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Education

- Ph.D. 2002. The Ohio State University; Evolution, Ecology, and Organismal Biology, Columbus, OH. Dissertation Title: “Exploring mechanisms regulating recruitment of white crappie in Ohio reservoirs.”
- M.S. 1997. Clemson University; Fisheries Biology, Clemson, SC. Thesis title: “Diel movement of brown trout in a southern Appalachian river.”
- B.S. 1995. Centre College, *Magna cum laude*; Biology, Danville, KY.

Employment

- 2020 – present Director of Coregonine Restoration, USGS Great Lakes Science Center, Ann Arbor, Michigan
- 2004 – 2020 Research Fishery Biologist, USGS Great Lakes Science Center, Ann Arbor, Michigan.
- 2003 –2004. Assistant Research Scientist, Chesapeake Biological Laboratory, Solomons, Maryland.
- 2002 –2003. Post-doctoral researcher, Ontario Ministry of Natural Resources, Wheatley, Ontario.
- 1997 –2002. Graduate Research Associate, Ohio State University, Evolution, Ecology, and Organismal Biology, Columbus, Ohio.
- 1995 –1997. Graduate Research Associate, Clemson University Cooperative Fish and Wildlife Research Unit, Clemson, SC.

Publications

- Bunnell, D. B.**, A. S. Ackiss, K. M. Alofs, C. O. Brant, C. R. Bronte, R. M. Claramunt, J. M. Dettmers, A. E. Honsey, N. E. Mandrak, A. M. Muir, V. J. Santucci, D. R. Smith, R. M. Strach, J. A. Sweka, B. C. Weidel, W. P. Mattes, and K. R. Newman. 2023. A science and management partnership to restore coregonine diversity to the Laurentian Great Lakes. *Environmental Reviews*. doi: 10.1139/er-2022-0109.
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- Rowe, M. D., S. E. Prendergast, K. M. Alofs, **D. B. Bunnell**, E. S. Rutherford, and E. J. Anderson. 2022. Predicting larval alewife transport in Lake Michigan using hydrodynamic and Lagrangian particle dispersion models. *Limnology and Oceanography* 67: 2042-2058.
- Schaefer, H. S., A. E. Honsey, **D. B. Bunnell**, B. C. Weidel, R. DeBruyne, J. S. Diana, D. Gorsky, and E. F. Roseman. 2022. Predicting physical and geomorphic habitat associated with historic coregonine spawning locations in Lakes Erie and Ontario. *Journal of Great Lakes Research* 48: 1636-1646.
- Madenjian, C. P., **D. B. Bunnell**, R. W. Tingley, and P. M. Dieter. 2022. Addition of deepwater sampling of prey fish in Lake Michigan annual bottom trawl survey reveals new insights for depth distribution dynamics. *Journal of Great Lakes Research* 48: 1288-1297.

- Dieter, P. M., **D. B. Bunnell**, and D. M. Warner. 2022. Seasonal variability of invertebrate prey diet and selectivity of the dominant forage fishes in Lake Huron. *Food Webs* 30: e00215.
- Conard, W. M., B. S. Gerig, L. M. Lovin, **D. B. Bunnell**, and G. A. Lamberti. 2022. Metal accumulation in Lake Michigan prey fish: influence of ontogeny, trophic position, and habitat. *Journal of Great Lakes Research* 47: 1746-1755.
- Volkel, S. L., K. F. Robinson, **D. B. Bunnell**, M. J. Connerton, J. P. Holden, D. W. Hondorp, and B. C. Weidel. 2021. Slimy sculpin depth shifts and habitat squeeze following the round goby invasion in the Great Lakes. *Journal of Great Lakes Research* 47: 1793-1803.
- Bunnell, D. B.**, S. A. Ludsin, R. L. Knight, L. G. Rudstam, C. E. Williamson, T. O. Hook, P. D. Collingsworth, B. M. Lesht, R. P. Barbiero, A. E. Scofield, E. S. Rutherford, L. Gaynor, H. A. Vanderploeg, and M. A. Koops. 2021. Consequences of changing water clarity on the fish and fisheries of the Laurentian Great Lakes. *Canadian Journal of Fisheries and Aquatic Sciences*. 78: 1524-1542.
- Kirkendall, D. S., **D. B. Bunnell**, P. M. Armenio, L. A. Eaton, A. S. Trebitz, and N. M. Watson. 2021. Spatial and temporal distributions of *Dreissena* spp. veligers in Lake Huron and evidence that calcium limitation reduces settling success? *Journal of Great Lakes Research* 47: 1040-1049.
- Robinson, K. F., C. R. Bronte, **D. B. Bunnell**, P. T. Euclide, D. Hondorp, J. A. Janssen, M. S. Kornis, D. H. Ogle, W. Otte, S. C. Riley, M. R. Vinson, S. L. Volkel, and B. Weidel. 2021. A synthesis of the biology and ecology of sculpin species in the Laurentian Great Lakes and implications for the adaptive capacity of the benthic ecosystem. *Reviews in Fisheries Science and Aquaculture* 29: 96-121.
- Kao, Y-C., M. W. Rogers, **D. B. Bunnell**, I. G. Cowx, S. S. Qian, O. Anneville, T. D. Beard Jr., A. Brinker, J. R. Britton, R. Chura-Cruz, N. J. Gownaris, J. R. Jackson, K. Kangur, J. Kolding, A. A. Lukin, A. J. Lynch, N. Mercado-Silva, R. Moncayo-Estrada, R. J. Njaya, I. Ostrovsky, L. G. Rudstam, A. L. E. Sandstrom, Y. Sato, H. Siguayro-Mamani, A. Thorpe, P. A. M. van Zwieten, P. Volta, Y. Wang, A. Weiperth, O. L. F. Weyl, and J. D. Young. 2020. Effects of climate and land-use changes on fish catches across lakes at a global scale. *Nature Communications* 11: Article number: 2526 (2020) <https://doi.org/10.1038/s41467-020-14624-2>
- Kinney, D., **D. B. Bunnell**, M. W. Rogers, A. J. Lynch, T. D. Beard, and S. Funge-Smith. 2020. Inland commercial fisheries in the United States: carp, catfish, and gaps in national reporting. *Fisheries* 45: 585-596. DOI: 10.1002/fsh.10483.
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- Lynch, A. J., D. M. Bartley, T. D. Beard, Jr., **D. B. Bunnell**, S. J. Cooke, I. G. Cowx, S. Funge-Smith, C. P. Paukert, M. W. Rogers, and W. W. Taylor. 2020. InFish: a research network to promote global conservation and sustainable use of inland fish. *Fisheries* DOI: 10.1002/fsh.10419
- Kao, Y-C., **D. B. Bunnell**, R. L. Eshenroder, and D. N. Murray. 2020. Historical habitat use of cisco (*Coregonus artedii*) in Lake Michigan. *PLOS One*. 15(4): e0231420. <https://doi.org/10.1371/journal.pone.0231420>.
- Kornis, M. S., **D. B. Bunnell**, H. K. Swanson, and C. R. Bronte. 2020. Spatiotemporal patterns in trophic niche overlap among five salmonines in Lake Michigan, U.S.A. *Canadian Journal of Fisheries and Aquatic Sciences*. 77: 1059-1075
- Smith, S.E., E. P. Palkovacs, B. C. Weidel, D. B. Bunnell, A. W. Jones, and D. D. Bloom. 2020. A century of intermittent eco-evolutionary feedbacks resulted in novel trait combinations in invasive Great Lakes alewives (*Alosa pseudoharengus*) *Evolutionary Applications* 13: 2630-2645.
- Bunnell, D. B.**, S. A. Pothoven, P. M. Armenio, L. Eaton, D. M. Warner, A. K. Elgin, L. E. Burlakova, and A. Y. Karatayev. 2019. Spatiotemporal variability in energetic condition of alewife and round goby in Lake Michigan. *Canadian Journal of Fisheries and Aquatic Sciences* 76: 1982-1992.
- Eppehimer, D. E., **D. B. Bunnell**, P. M. Armenio, D. M. Warner, L. Eaton, D. J. Wells, and E. S. Rutherford. 2019. Densities, diets, and growth rates of larval Alewife and Bloater in a changing Lake Michigan ecosystem. *Transactions of the American Fisheries Society* 148: 755-770.
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- Smith, S. D. P., **D. B. Bunnell**, G. A. Burton, Jr., J. J. H. Ciborowski, A. D. Davidson, C. E. Dickinson, L. A. Eaton, P. C. Esselman, M. A. Evans, D. R. Kashian, N. F. Manning, P. B. McIntyre, T. F. Nalepa, A. Perez-Fuentetaja, A. D. Steinman, D. G. Uzarski, and J. D. Allan. 2019. Evidence for interactions among environmental stressors in the Laurentian Great

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- Kao, Y., M. W. Rogers, and **D. B. Bunnell**. 2017. Evaluating stocking efficacy in an ecosystem undergoing oligotrophication. *Ecosystems* 21: 600-618. DOI: 10.1007/s10021-017-0173-5
- Lynch, A. J., I. G. Cowx, E. Fluet-Chouinard, S. M. Glaser, S. C. Phang, T. D. Beard, Jr., S. D. Bower, J. L. Brooks, **D. B. Bunnell**, J. E. Claussen, S. J. Cooke, Y.-C. Kao, K. Lorenzen, B. J. E. Myers, A. J. Reid, J. J. Taylor, and S. Youn. 2017. Inland fisheries - invisible but integral to the UN Sustainable Development Agenda for ending poverty by 2030. *Global Environmental Change* 47: 167-173.
- Myers, B. J. E., A. J. Lynch, **D. B. Bunnell**, C. Chu, J. A. Falke, R. P. Kovach, T. J. Krabbenhoft, T. J. Kwak, and C. P. Paukert. 2017. Global synthesis of the predicted and observed effects of climate change effects on inland fish. *Reviews in Fish Biology and Fisheries*. doi:10.1007/s11160-017-9476-z
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- Bunnell, D. B.**, T. O. Höök, C. D. Troy, C. P. Madenjian, and J. V. Adams. 2016. Testing for synchrony in recruitment among four Lake Michigan fish species, 1973-2011. *Canadian Journal of Fisheries and Aquatic Sciences* 74: 306-315.
- Kerns, J. A., M. W. Rogers, **D. B. Bunnell**, R. M. Claramunt, and P. D. Collingsworth. 2016. Comparing life history characteristics of Lake Michigan's naturalized and stocked Chinook Salmon. *North American Journal of Fisheries Management* 36: 1106-1118.
- Lauber, T. B., R. C. Stedman, N. A. Connelly, L. G. Rudstam, R. C. Ready, G. L. Poe, **D. B. Bunnell**, T. O. Höök, M. A. Koops, S. A. Ludsin, and E. S. Rutherford. 2016. Using scenarios to assess possible future impacts of invasive species in the Laurentian Great Lakes. *North American Journal of Fisheries Management* 36: 1292-1307.
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- Bunnell, D. B.**, D. W. Lipton, and T. J. Miller. 2010. The bioeconomic impact of different management regulations on the Chesapeake Bay blue crab fishery. *North American Journal of Fisheries Management* 30:1505-1521.
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- invasion of dreissenid mussels. *Transactions of the American Fisheries Society* 139:11-20
- Jacobs, G. R., Madenjian, C. P., **Bunnell, D. B.**, Holuszko, J. D., and Hanson, D. 2010. Diet of lake trout and burbot in northern Lake Michigan during spring: evidence of ecological interaction. *Journal of Great Lakes Research* 36:312-317.
- Barbiero, R. P., **D. B. Bunnell**, D. C. Rockwell, and M. L. Tuchman. 2009. Recent increases in the large glacial-relict calanoid *Limnocalanus macrurus* in Lake Michigan. *Journal of Great Lakes Research*. 35:285-292.
- Zweifel, R. D., R. S. Hale, **D. B. Bunnell**, and M. T. Bremigan. 2009. Hatch timing variations among reservoir gizzard shad populations: implications for stocked *Sander* spp. fingerlings. *North American Journal of Fisheries Management*. 29: 488-494
- Bunnell, D. B.**, C. P. Madenjian, J. D. Holuszko, J. V. Adams, and J. R. P. French. 2009. Expansion of *Dreissena* into offshore waters of Lake Michigan and potential impacts on fish populations. *Journal of Great Lakes Research* 35:74-80
- Bunnell, D. B.**, S. R. David, and C. P. Madenjian. 2009. Decline in bloater fecundity in southern Lake Michigan: effect of *Diporeia* decline? *Journal of Great Lakes Research* 35:45-49
- Madenjian, C. P., and **D. B. Bunnell**. 2008. Depth distribution dynamics of the sculpin community in Lake Michigan. *Transactions of the American Fisheries Society* 137:1346-1357
- Bremigan, M. T., P. A. Soranno, M. J. Gonzalez, **D. B. Bunnell**, K. K. Arend, W. H. Renwick, R. A. Stein, and M. J. Vanni. 2008. Hydrogeomorphic features mediate the effects of land use on reservoir productivity and food webs. *Limnology and Oceanography* 53:1420-1433.
- Madenjian, C. P., R. O’Gorman, **D. B. Bunnell**, R. L. Argyle, E. F. Roseman, D. M. Warner, J. D. Stockwell, and M. A. Stapanian. 2008. Adverse effects of alewife (*Alosa pseudoharengus*) on Great Lakes fish communities. *North American Journal of Fisheries Management* 28: 263-282.
- Madenjian, C. P., D. M. Warner, **D. B. Bunnell**, R. M. Claramunt, and J. M. Dettmers. 2008. Status of planktivore populations. Pages 49-54 In The State of Lake Michigan in 2005. *Great Lakes Fishery Commission Special Publication* 08-02.
- Hewitt, D. A., D. M. Lambert, J. M. Hoenig, R. N. Lipcius, **D. B. Bunnell**, and T. J. Miller. 2007. Direct and indirect estimates of natural mortality for Chesapeake Bay blue crab. *Transactions of the American Fisheries Society* 136: 1030-1040.
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- Bunnell, D. B.**, C. P. Madenjian, and R. M. Claramunt. 2006. Long-term changes of the Lake Michigan fish community following the reduction of exotic alewife (*Alosa pseudoharengus*). *Canadian Journal of Fisheries and Aquatic Sciences* 63: 2434-2446.
- Bunnell, D. B.**, C. P. Madenjian, and T. E. Croley. 2006. Long-term trends of bloater recruitment in Lake Michigan: evidence for the effect of sex ratio. *Canadian Journal of Fisheries and Aquatic Sciences* 63: 832-844.
- Bunnell, D. B.**, R. S. Hale, M. J. Vanni, and R. A. Stein. 2006. Predicting crappie recruitment in Ohio reservoirs with spawning stock size and larval density. *North American Journal of Fisheries Management* 26: 1-12.
- Johnson, T. B., **D. B. Bunnell**, and C. T. Knight. 2005. Benthic-pelagic coupling in Lake Erie- the round goby connection. *Journal of Great Lakes Research* 31(Supp.2): 238-251.
- Bunnell, D. B.**, and T. J. Miller. 2005. An individual-based modeling approach to per-recruit models: an application to blue crab *Callinectes sapidus* in Chesapeake Bay. *Canadian Journal of Fisheries and Aquatic Sciences* 62: 2560-2572.
- Bunnell, D. B.**, M. A. Scantland, and R. A. Stein. 2005. Testing for evidence of maternal effects among individuals and populations of white crappie. *Transactions of the American Fisheries Society* 134: 607-619.
- Vanni, M. J., K. K. Arend, M. T. Bremigan, D. B. Bunnell, J. E. Garvey, M. J. Gonzalez, W. H. Renwick, P. A. Soranno, and R. A. Stein. 2005. Linking landscapes and food webs: effects of omnivorous fish and watersheds on reservoir ecosystems. *Bioscience* 55: 155-167.
- Bunnell, D. B.**, T. B. Johnson, and C. T. Knight. 2005. The impact of introduced round gobies *Neogobius melanostomus* on phosphorus cycling in central Lake Erie. *Canadian Journal of Fisheries and Aquatic Sciences*. 62: 15-29.
- Bunnell, D. B.**, M. J. Gonzalez, and R. A. Stein. 2003. Zooplankton influences growth, but not survival, of first-feeding *Pomoxis* spp. larvae. *Canadian Journal of Fisheries and Aquatic Sciences*. 60: 1314-1323.
- Bunnell, D. B.** and E. A. Marschall. 2003. Optimal energy allocation to ovaries after spawning. *Evolutionary Ecology Research*. 5: 439-457.
- McCollum, A. B., **D. B. Bunnell**, and R. A. Stein. 2003. Cold, northern winters: the importance of temperature to survival of age-0 white crappie. *Transactions of the American Fisheries Society*. 132: 977-987.
- Burrell, K. B., D. L. Van Lear, **D. B. Bunnell**, J. J. Isely, and C. A. Dolloff. 2000. Seasonal movement of brown trout in the Chattooga River watershed. *Transactions of the American Fisheries Society* 129: 1373-1379.

Bunnell, D. B. and J. J. Isely. 1999. Influence of temperature on mortality and retention of simulated transmitters in rainbow trout. *North American Journal of Fisheries Management* 19:152-154.

Bunnell, D. B., J. J. Isely, K. B. Burrell, and D. L. Van Lear. 1998. Diel movement of brown trout in a southern appalachian river. *Transactions of the American Fisheries Society* 127: 630-636.

Invited Seminars

University of Wisconsin-Milwaukee, School of Freshwater Sciences. May 2021.

University of Michigan, School of Environment and Sustainability. February 2020.

Miami University, Department of Biology. October 2019.

Purdue University, Department of Forestry and Natural Resources. March 2017.

University of Illinois, Urbana-Champaign, Department of Natural Resources and Environmental Sciences. October 2015.

Grand Valley State University, Annis Water Resources Institute. April 2015.

Central Michigan University, Biology Department. November 2014.

USGS Ecosystems Science Strategy Planning Team. May 2011.

Department of Fisheries & Oceans, Canada. Cisco Workshop, February 2011.

Centre College, Biology and Statistics workshop, October 2010.

Kent State University, Department of Biological Sciences, November 2008.

Bowling Green State University, Department of Biological Sciences, October 2008.

University of Toledo, Department of Environmental Sciences, February 2008.

Michigan State University, Dept. of Fisheries and Wildlife, October 2007.

North Carolina State University, Dept. of Zoology, April 2007.

Great Lakes Fishery Commission, Board of Technical Experts, February 2007.

The Ohio State University, Dept. of Evolution, Ecology, and Organismal Biology. February 2007.

“Restoration of Native Fishes” workshop, Great Lakes Fishery Commission. November 2006.

Eastern Michigan University, Biology Department, October 2006.

USGS Great Lakes Science Center, August 2004.

University of St. Thomas, Biology Department, February 2003

Miami University, Department of Zoology, October 2002.

Otterbein College, Biology Department, May 2001.

John Carroll University, Biology Department. March 2001.

Oak Ridge National Laboratory, October 1997.

Centre College, Biology Department, May 1997.

External Grants

“Evaluating how changing climate and water clarity can affect restoration of native coregonines in midwestern lakes”. Lead PI: **D. B. Bunnell**. Co-PIs: C. Williamson, N. Berry, E. Overholt, G. Hansen, P. Jacobson, T. Ahrenstorff, C. Schoenebeck, J. Schmitt, C. Madenjian, K. Keeler, and A. Lynch. USGS Midwest Climate Adaptation Science Center, 2021. Total award: \$492,075.

“Understanding and forecasting potential recruitment of Lake Michigan fishes by modeling growth and survival of larval stages with coupled climate, biophysical, and bioenergetics models”. Co-Lead PIs: T. Höök and **D. B. Bunnell**. Co-

- PIs: M. Rowe, E. Rutherford, P. Collingsworth and P. Xue. USGS Midwest Climate Adaptation Science Center, 2020. Total award: \$416,671.
- “Linkages between genetics, form, and function in Coregonines”. Lead PI: D. Bunnell. Co-PI: W. Stott, T. O’Brien, B. Weidel, R. Eshenroder, A. Muir, C. Olds, and J. Vander Zanden. Environmental Protection Agency, Great Lakes Restoration Initiative, 2019. Total award: \$73,570.
- “Historical habitat uses by *Coregonus artedii* in the upper Great Lakes and critical embayments”. Lead PI: **D. Bunnell**. Co-PI: Y. Kao and O. Gorman. Environmental Protection Agency, Great Lakes Restoration Initiative, 2018. Total award: \$135,676.
- “Linking fish to lower trophic level variability at the lakewide scale in Lake Huron.” Lead PI: **D. Bunnell**. Co-PI: D. Warner. Environmental Protection Agency, Great Lakes Restoration Initiative, 2017. Total award: \$372,417.
- “Historical habitat use by *Coregonus artedii* in Lake Michigan.” Lead PI: **D. Bunnell**. Co-PI: Y. Kao. Environmental Protection Agency, Great Lakes Restoration Initiative, 2017. Total award: \$99,443.
- “Evaluating linkages between tributary inputs and secondary production in Lake Michigan.” Lead PI: **D. Bunnell**. Co-PI: D. Warner. Environmental Protection Agency, Great Lakes Restoration Initiative, 2014-2015. Total award: \$525,000.
- “Developing new strategies for the global assessment of inland fisheries and predicting the response of inland fisheries to regional climate change” Co-PIs: **D. Bunnell**, M.W. Rogers, D. Beard. USGS National Climate Change and Wildlife Center. 2001-2012. Total award: \$536,393
- “Development and correlation of physical process indices with inter-annual recruitment variability in Lake Michigan.” Great Lakes Fishery Commission. PI: C. Troy (Purdue U). Co-PIs: T. Hook and **D. Bunnell**. Total award = \$211,341.
- “Exploring life history characteristics of naturalized versus stocked Chinook salmon”. Great Lakes Fishery Trust. PI: M. Rogers. Co-PI: **D. Bunnell** and P. Collingsworth. Total award: \$256,107.
- “The effect of changing energy pathways on Lake Huron fish production”. Lead PI: **D. Bunnell**. Co-PIs: D. Warner, B. Davis, M. Rogers. Environmental Protection Agency, Great Lakes Restoration Initiative, 2010-2011. Total award: \$421,500.
- “Facilitation of Ecopath modeling in the Great Lakes”. Lead PI: Mark Rogers. Co-PI: **D. Bunnell**. Great Lakes Fishery Commission, 2011. Total award: \$9,645.
- “Changes in energy transfer within Great Lakes food webs: implications for fish production”. Lead PI: **D. Bunnell**. Co-PIs: C. Madenjian, D. Warner, B. Davis. Environmental Protection Agency, Great Lakes Restoration Initiative, 2010-2011. Total award: \$750,000.
- “Forecasting climate-change induced effects on recreational and commercial fish populations in the Great Lakes”. Lead PI: **D. Bunnell**, Co-PIs: R. Claramunt (Michigan DNR), K. Kowalski, B. Lesht (U. Illinois), B. Lofgren (NOAA), C. Madenjian, M. Murray (National Wildlife Federation), S. Riley, E. Roseman, D. Warner. USGS National Climate Change and Wildlife Center. 2009-2011. Total award: \$499,987.
- “Evaluating the negative effects of slimy sculpins on bloaters in Lake Michigan”. Lead PI: **D. Bunnell**, Co-PIs: C. Madenjian, E. Rutherford, W. Stott. Great Lakes Fishery Commission. 2009-2010. Total award: \$169,349
- “Role of invasive species in Lake Huron food web disruptions”. Environmental Protection Agency, Great Lakes National Program Office. J. Savino, **D. Bunnell**, B. Dorgan, S. Nichols, E. Roseman, D. Warner. 2007 – 2008. Total award: \$192,685.
- “River discharge as a predictor of Lake Erie yellow perch recruitment.” Great Lakes Fishery Commission. Lead PI: S. Ludsin, Co-PIs: D. Mason, H. Vanderploeg, G. Leshkevich, T. Johnson, J. Tyson, C. Mayer, **D. Bunnell**, D. Heath, B. Fryer, and T. Hook. 2006 – 2008. Total award: \$339,583.
- “Development of bioeconomic models for blue crabs in the Chesapeake Bay.” Maryland Sea Grant. PI: **D. B. Bunnell** and T. J. Miller. 2005 - 2006. Total award: \$61,996.
- “Exploring mechanisms regulating crappie populations in Ohio reservoirs”. Ohio Department of Natural Resources grant. 1998 - 2002. PI: R. A. Stein, Ohio State University. Total award= \$506,432. (I participated and helped lead all aspects of the grant, but not permitted to be a PI).

Honors and Awards

James M. Moffett Publication Award, 2018 and 2007. Presented for the best peer-reviewed publication in the GLSC in 2017 and 2006, respectively.

Special Thanks to Achieve Results (STAR) Award, USGS Great Lakes Science Center, August 2009. Awarded for stint as Acting Western Basins Ecosystems Branch Chief.

USGS Leadership 101 course, February 2007. Nominated to take weeklong class on leadership skills development.

STAR Award, USGS Great Lakes Science Center, December 2006. Awarded for high research productivity.

USGS Leadership Coin, March 2006. Awarded for leadership in starting GLSC-Center-wide Brown bag lunch seminar series.

Honorable Mention, Best Student Paper Award. 2001. Southern Division of the American Fisheries Society, Mid-Year meeting, Jacksonville, FL.

Preparing Future Faculty Program. 2000-2001. The Ohio State University.

E. Wilbur Cook Biological Sciences Award. 1995. Centre College.

Phi Beta Kappa. 1995. Centre College

Teaching Experience

2023, 2021, 2019, 2016, 2014, 2012, 2010. Fisheries Science and Management, University of Michigan. Instructor for course.

2019. Invited (by Paul Seelbach) guest lecture for Science and Management of the Great Lakes: School for Environment and Sustainability, University of Michigan. Taught "Offshore food-webs in the Great Lakes: an ecosystem perspective to inform fish management"

2017. Invited (by Jim Diana) guest lecture for Fish Ecology: School of Natural Resources and the Environment, University of Michigan. Taught "Predation and structure".

2017, 2011. Invited (by Tomas Hook and Cary Troy) guest lecture for Forestry and Natural Resources 693: Great Lakes Science and Management, Purdue University. Taught "Great Lakes Fisheries Management and Sustainability".

2011. Invited (by Larissa Sano) guest lecture for Biological Sciences 315: Aquatic Ecosystems, University of Michigan-Dearborn. Taught "Great Lakes Fisheries Management and Sustainability".

2008-2010. Invited (by Ted Batterson) guest lecture for Great Lakes: Biology and Management (FW 207), Michigan State University. Taught "Management of Great Lakes Fisheries".

2007. Invited (by Tomas Hook) guest lecture for Great Lakes Science and Management (NRE 639), University of Michigan. Taught "Fisheries Management and Sustainability".

Invited (by Kristi Arend) guest lecture for Ichthyology (EEOB 621), Ohio State University at Stone Laboratory. Taught "Reproductive life history strategies".

2001. Graduate Teaching Assistant for Evolution (EEOB 400), The Ohio State University. Led discussions, review sessions, and problem sets for two recitations. Helped write and grade essay examinations for lectures.

1999. Graduate Teaching Assistant for Introduction to Ecology (EEOB 413), The Ohio State University. Served as "Head GTA" in charge of all four laboratory sections and GTAs. Led weekly meetings to discuss previous and upcoming laboratories. Taught one laboratory section. Provided changes to the laboratory handbook designed by professor. Graded all assignments in my laboratory section, and graded exams and research papers from the lecture portion of the course.

1998. Graduate Teaching Assistant for Introduction to Ecology (EEOB 413), The Ohio State University. Taught one laboratory section and graded exams and research papers from the lecture portion of the course.

1995. Student Teacher, Garrard County (KY) High School. Independently taught Advanced Anatomy/Physiology and Advanced Placement Biology for four months. Formulated lesson plans, devised laboratories, and created tests to meet curriculum set forth by supervising teacher.

Professional service

Associate Editor, *Journal of Great Lakes Research*, 2019 – 2021.

Invited speaker to Lake Michigan stakeholder meeting sponsored by Illinois Department of Natural Resources. Chicago, IL. February 2019

Invited Expert to provide lower trophic level expertise at a Great Lakes Fishery Commission and Great Lakes Fishery Trust workshop for managers seeking to set research priorities for Lake Whitefish in the Great Lakes. February 2018.

Invited lead organizer for GLFC workshop on lower trophic level effects on fisheries management. Cornell University August 2017.

Invited outside reviewer to evaluate Promotion to Full Professor for scientist at the Illinois Natural History Survey. November 2017.

Invited expert panelist to oversee International Joint Commission Project “Understanding declining productivity in offshore waters of the Great Lakes”. May 2017- April 2018.

Invited expert workshop attendee at Food and Agriculture Organization (of the United Nations) sponsored workshop entitled “Improving our knowledge on small-scale fisheries: Data needs and methodologies”. June 2017.

Associate Editor, *Transactions of the American Fisheries Society*, 2007 – 2015.

Invited member, Science Advisory Board to the Great Lakes Fishery Trust, Review full proposals submitted to the Great Lakes Fishery Trust and recommend funding in excess of \$1 million. 2013-2015.

Invited presenter, Lake Michigan Yellow Perch Summit, which was a meeting of stakeholders and managers interested in improved understanding of the scientific underpinnings of management decisions for Lake Michigan yellow perch. Chicago, IL March 2014

Invited participant, workshop on global inland fisheries sustainability, and brainstorming new methods to estimate global production. Pitlochry, Scotland, May 2012.

Invited expert panelist, Department of Fisheries and Oceans, Canada, for their stock assessment of snow crab in the southern Gulf of St. Lawrence, Canada. February 2012.

Invited Editor, State of Lake Michigan. Document published by the Great Lakes Fishery Commission every 5 years to evaluate progress towards the achievement of the Fish Community Objectives for Lake Michigan during 2005-2010. My responsibilities include writing introductory and concluding chapters, and all editorial duties associated with the other four chapters of the document. 2010-2011.

Invited member, scientific workshop on the status of endangered and threatened coregonid (cisco) stocks in Canada. Sponsored by Department of Fisheries and Oceans, Canada. 2011.

Invited member, Scientific review panel for a 2007 Brookings Institute Study entitled, “Healthy waters, strong economy: the benefits of restoring the Great Lakes Ecosystem”. 2006-2007.

Graduate Student Advising

Justin Londer, M. S. Student, University of Michigan, 2009-2011. “Diet overlap and food habits of slimy sculpin, deepwater sculpin, and round goby during winter and spring in offshore Lake Michigan”. With Dr. Jim Diana

Kevin Keeler, M. S. Student, University of Michigan, 2011-2014. "Determining the role of fish planktivory on spiny water flea production in the Upper Great Lakes". With Dr. Jim Diana

Qihong Dai, M.S. Student, University of Michigan, 2017-2018. "Energy content of rainbow smelt (*Osmerus mordax*) in Lake Huron, and a comparison between Lake Huron and Erie". With Dr. Jim Diana

Hannah Schaefer, M.S. Student, University of Michigan, 2017-2019. "Predicting spawning habitat for Lake Whitefish *Coregonus clupeaformis* and Cisco *Coregonus artedi* in the Lake Erie and Lake Ontario regions using classification and Regression Tree (CART) and Random Forest Models". With Dr. Jim Diana and Dr. Ed Roseman

Ellary Marano, M.S. Student, University of Michigan, 2019-2021. "Evidence for the importance of invasive *Dreissena veligers* as a novel prey item for larval fish." With Dr. Karen Alofs

Paris Schofield, M.S. Student, University of Michigan, 2021-2023. "Temporal genetic diversity of Cisco (*Coregonus artedi*) in Lake Huron." With Dr. Amanda Ackiss.

Graduate Student Committees

Joseph Beuchel, M.S. Student, The Ohio State University, 2004-2006. "Latitudinal trends in seasonal life-history strategies: comparisons of bluegill and crappie."

Nathan Manning, PhD Student, University of Toledo. 2007-2013. "Modeling the Effects of Turbidity on Age-0 Yellow Perch (*Perca flavescens*) in the Western Basin of Lake Erie"

Shea Vokel, M.S. Student, Michigan State University, 2016-2019. "Evaluation of changes in sculpin populations in the Great Lakes associated with shifts in benthic species composition".

Marissa Cubbage, M.S. Student, Purdue University, 2019-2021. "Impacts of zooplankton abundance and community composition on larval fish habitat quality and larval coregonid diets".

Qihong Dai, Ph.D Student, University of Illinois, 2018-2022. "How climate change and agriculture could reshape the Midwestern stream fish communities".

Anjali Shakya, M.S. Student, University of Michigan, 2020-2021. "Water column contributions to ecosystem production on coral reefs: an ecosystem ecology approach."

Ben Martin, Ph.D. Student, University of Wisconsin, 2019-2023. "Detecting and synthesizing ecological change in invaded food webs".

Nicole Berry, Ph.D. Student, Miami University, 2019-present. "Effects of ultraviolet radiation on early life history stages of midwestern fish species"

Post-doctoral advising

Paris Collingsworth, 2009-2010. Currently Assistant Research Professor, Purdue University

Mark W. Rogers, 2010-2012. Currently Associate Professor and USGS Coop Unit Leader at Tennessee Tech University

Andrew Deines, 2013-2015. Currently Managing Scientist at Exponent Consulting

Carly Nowicki, 2015-2016. Currently Lecturer III at University of Michigan

Yu-Chun Kao, 2015- 2020. Currently Research Ecologist at USGS Great Lakes Science Center