Curriculum Vitae - Carol A. Stepien, Ph.D.

November 2018

NOAA Pacific Marine Environmental Laboratory (PMEL)
Ocean Environment Research Division Leader & Supervisory Oceanographer
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EDUCATION

Postdoctoral **National Research Council Research Associate**, **NOAA Fisheries, San Diego, CA**
Conservation population genetics and fisheries ecology, fish stock structure
Alfred Sloan Foundation Fellow in Molecular Evolution, The University of Texas, Austin
Molecular evolution, systematics, and biogeography of marine fishes
National Science Foundation (NSF) Fellow and P.I., Scripps Institution of Oceanography, University of California, San Diego: *Population genetics, molecular ecology, evolution and biogeography of kelp forest fishes*

Ph. D. **University of Southern California,** Department of Biological Sciences. Ecology and Evolutionary (Marine) Biology. *Dissertation: Genetic versus environmental regulation of colormorphic patterns in kelpfishes*

M. S. **University of Southern California,** Department of Biological Sciences. Ecology and Evolutionary Biology. *Thesis: Ecological distribution of nearshore fish larvae in the California Current*

B. S. **Bowling Green University**, Ohio, *magna cum laude*. Biology major, Chemistry and English minors. Summer courses and research at the Gulf Coast Research Lab.
Senior Honors Research Project: Neurobiology of fish bioluminescence

EMPLOYMENT

2016-present **Ocean Environment Research Division Leader, NOAA PMEL** (Pacific Marine Environmental Research Laboratory)

- *Lead and develop, innovate, coordinate, and disseminate multidisciplinary programs and projects in Oceanography across the world's oceans*
- *7 Reporting research groups & ~90 scientists: Ecosystems and Fisheries Oeanographer Coordinated Investigations (EcoFOCI), Arctic Ecosystems, Earth-Ocean Interactions (EOI: Hydrothermal Vents, Hydroacoustics, NOAA Center for Tsunami Research (NCTR), Innovative Technology for Arctic Exploration (ITAE; including Saildrone, Oculus glider),Genetics and Genomics Group (G3)*
- ***AAAS, American Association for Advancement of Science Fellow** (2017-present)*
- *Joint Institute for Study of the Atmosphere & Ocean (JISAO) Advisory Board, U. Washington*
- *Collections Management Policy Group for NOAA*
- *NOAA OAR Ocean Portfolio Team (cross-line offices, setting overall goals & priorities)*
- *NOAA Interagency Genomics Collaboration Group*
- *Ocean Acidification Roundtable Group (Multi-agency, with NOAA Fisheries)*
- *Head and established new PMEL Genetics and Genomics Group (G3) to interface environmental DNA sampling and genetic/genomic/bioinformatic analyses*
- *Genetics & Genomics Group (G^3) Lab Research projects: Genetic connectivity among hydrothermal vent and methane seep communities; eDNA sampling and bioinformatics assessment of Pacific marine fish and invertebrate populations; Genetic & genomic macrocommunity responses to ocean acidification; Metagenomic analyses of marine community responses across time and space in changing Pacific and Arctic ecosystems*

Affiliate Professor of Biological Oceanography, University of Washington, School of Oceanography, 2017-present (joint with NOAA position, unpaid appointment)

Affiliate Professor, Oregon State University, Dept. of Fisheries and Wildlife, 2017-present (joint with NOAA position, unpaid appointment)

2018-present Research Associate/Collaborator of the U.S. National Museum of Natural History, Smithsonian Institution, Washington, D.C. (concurrent, an unpaid appointment)

2012-present Distinguished University Professor of Ecology Lifetime Appointment (one of just 18 Distinguished Professorships across the University)

2004-2018 Tenured full Professor, Department of Environmental Sciences, University of Toledo, (on exended leave of absence 2016- 2018 (resigned Dec. 31, 2018), while transitioning to NOAA to graduate Ph.D. students and complete grants)

- *2017: U. Toledo President's Career Award for Excellence in Grantsmanship*

2004-2016 Director of the Lake Erie Center and tenured Full Professor of Ecology, **University of Toledo** (concurrent with above; resigned directorship in 2016 to relocate to new promotional position at NOAA PMEL, began October 17, 2016; retained professorship through 12-18)

- *Led, developed, innovated, coordinated, and disseminated multidisciplinary and multi-institutional research, education, and outreach programs and projects*
- *Worked with and coordinate the Lake Erie Center's (LEC) advisory boards, professors, and staff to advance mission to understand and improve environmental sustainability in collaboration with federal (USGS, USEPA, NOAA, USDA, USFWS) and state agencies*
- *Conducted and supervised original research on conservation – genetics, genomics, ecology, and evolutionary patterns –as P.I. on extramural grants (~$10.7 million as lead P.I.),*
- *Communicated research findings and education issues that informed the Great Lakes community, the U.S. Congress, and State governments*
- *Lead P.I. for NSF $2.7 million "Graduate fellows in High School STEM Education: An Environmental Science Learning Community at the Land-Lake Ecosystem Interface" 2008-15*
- *Lead PI for NSF REU summer research program for undergraduates 2015-2017*
- *Lead PI for NSF "Environmental Sensor Network" - the world's first on a large lake*
- *Implemented ongoing LEC monthly public lecture series; annual photo & nature art contests*
- *Outstanding organization award from the Lake Erie Commission*
- *Headed the Great Lakes Genetics/Genomics Lab, supervising postdoctoral researchers, Ph.D. and M.S. graduate students, undergraduate research students, and technicians*
- *Editorial board of research journal Molecular Phylogenetics and Systematics.*
- *Genetics Editor for Biological Invasions and for Journal of Great Lakes Research*
- *University of Toledo's Outstanding Researcher Award*
- *Distinguished University Professor Appointment 2012-present (lifetime appointment)*
- *Sigma Xi Scientific Research Society Outstanding Researcher 2010, President 2013-15*

2000-2014 Research Associate Professor, Director of the Genetics Laboratory & Program Manager in Environmental Risk Analysis (Concurrent). ***Center for Environmental Science, Technology & Policy*** *(concurrent graduate faculty appointments and* ***Research Associate Professor***, ***Department of Biological, Geological & Environmental Sciences*** & the ***Chemistry Department,*** **Cleveland State University**

- *Grant writing, planning, coordination, and management (including multi-disciplinary and multi-institutional); $1.5 million awarded in grants as P.I.*
- *Managed productive $2 million USEPA multi-institutional USEPA Environmental Risk Analysis Program (10 faculty- Environmental Engineering, Economics, Biology, Chemistry)*
- *Environmental research: In charge of research conferences, seminars, symposia*
- *Ran environmental ecological genetics laboratory, supervising and supporting full-time research technicians, Ph.D. students, M.S. students, and undergraduate researchers*
- *P.I. of grants from NSF, NOAA, US Fish and Wildlife Service & Great Lakes Fishery Commission. Co-P.I. of NSF Research Experiences for Undergraduates (REU) program*
- *Scientific advisory board DNA Analysis Facility; genomics, bioinformatics, proteomics*
- *Graduate and undergraduate teaching: evolution, genetics, environmental sciences*
- *Editorial board of research joburnal Molecular Phylogenetics and Systematic*
- *Genetics Editor for Journal of Great Lakes Research, 2 Editor's awards*

1995-2000 **Assistant Professor, Department of Biology, Case Western Reserve University**
- *Established productive laboratory, ranked top 10% in extramural funding in department*
- *Published book, rated highly in Nature and 12 research papers*
- *Brought CWRU into the Great Lakes Aquatic Ecosystem Research Consortium and served as the institutional representative for faculty from Engineering, Geology, and Biology*
- *Graduated Ph.D. students and M.S. students - all published (with Stepien), gave professional presentations, and are employed in biology*
- *Sponsored 17 undergraduate research projects - publications, awards, and presentations*
- *Taught graduate and undergraduate courses in environmental sciences, biotechnology, ecology, evolution, population biology, and biogeography*
- *Organized environmental/ evolutionary symposia, seminars, and conferences*
- *Environmental Achievement award from Case for research, teaching, and mentorship*

1992-1995 **George B. Mayer Chair in Urban and Environmental Studies, Department of Biology, Case Western Reserve University.** *Rotating 3-year endowed research chair.*

1991-1992 **National Research Council Research Associate, National Marine Fisheries Service**, National Oceanic and Atmospheric Administration, La Jolla, California. *Comparative population genetics of commercial continental slope fisheries.*

1988-1990 **Sloan Foundation Postdoctoral Research Fellow in Molecular Evolutionary Biology, The University of Texas at Austin**. Sponsor: Dr. David M. Hillis. *Molecular evolution and systematics of blennioid fish families from nuclear DNA.*

1986-1988 **National Science Foundation Postdoctoral Researcher and Principal Investigator, Scripps Institution of Oceanography, University of California, San Diego.** Sponsor: Dr. Richard H. Rosenblatt. *Population genetics, biogeography, and systematic relationships of clinid fishes from molecular and morphological data.*

1984-1986 **Visiting Instructor of Biology and Marine Studies** (sabbatical replacement), **University of San Diego.** *Teaching, research, research sponsor.*

1985-1986 **Research Associate, Hubbs Marine Research Center**, San Diego. *Fish ecology*.

1983-1984 **Lecturer, California State University, Dominguez Hills**, Department of Biology.

1981-1982 **Graduate Research Assistant, NOAA Sea Grant, University of Southern California.** *Populations, systematics, and ecology of nearshore fish larvae.* Resident field and SCUBA diving research at Wrigley Marine Science Center on Santa Catalina Island.

1980-1984 **Laboratory Instructor and Teaching Assistant, University of Southern California.** *General Biology, Physiology, Marine Biology, Ichthyology, Invertebrate Zoology.*

RESEARCH: Molecular Ecology, Marine Population Genetics and Genomics, Evolutionary Patterns

1. **Molecular ecology, evolution, adaptedness, and population genetic/genomic connectivity patterns of marine and aquatic organisms.** *Projects: Co-evolution of VHS fish virus and fish host responses. Genetic stock structure of fishes. Interfacing and collaborations with the U.S. Aquatic Nuisance Species Task Force, federal, state, and provincial agencies, and research labs in the U.S., Canada, and Europe/Eurasia. New projects on hydrothermal vent and methane seep communities.*
2. **Environmental genetics, genomics, biogeography, and systematics across marine ecosystems.** *Tests of ecological, distributional, and adaptation hypotheses using genetics, genomics, and bioinformatics. Projects: Metagenomic dynamics of fish and invertebrate communities across northeastern Pacific waters: Responses to ocean warming, acidification and hypoxia. Environmental DNA identification, quantification, and adaptive responses of species and populations using eDNA and High-Throughput (=Next Generation) Sequencing and Bioinformatics.*
3. **Temporal and spatial evolutionary dynamics and genetic/genomic responses of marine communities.** *Population and community changes over time and space. Collaborating across U.S. and Canadian federal and state/provincial fisheries and environmental agencies to institute DNA methods for sampling and assessing community composition, resilience, structure and genetic/genomic changes with climate, acidification, and habitat.*

PUBLICATIONS, In Reverse Order (*N*=105 to date; *other New manuscripts are on p. 10*)

*** = students, technicians, and post-docs directly supervised by Stepien**

***** = Stepien as corresponding author & lead P.I.; H-Index=36, i10-Index=70***

Research Gate (top 96%): https://www.researchgate.net/profile/Carol_Stepien

Google Scholar: http://scholar.google.com/citations?user=CJrTt3kAAAAJ&hl=en; 3700 citations

Orcid: 0000-0002-5544-4333

105. Stepien, C.A. **, D. Eddins*, M. Snyder*, N. Marshall***.** Genetic change versus stasis over the time course of invasions: Trajectories of two concurrent, allopatric introductions of the Eurasian ruffe In Press. ***Aquatic Invasions***.

104. Stepien, C.A.**, C. Knight, M. Snyder*. **2018**. Genetic divergence of nearby walleye spawning groups in Central Lake Erie: implications for management. ***North American Journal of Fisheries Management.*** 38:783–793. *DOI: 10.1002/nafm.10176*

103. Tajbakhsk, F., C.A. Stepien, A. Abdoli, N. Tabatabaei, B.H. Kiabi. **2018.** Geometric morphometric and meristic analysis of the deepwater goby, *Ponticola bathybius* (Kessler, 1877) (Teleostei: Gobiidae) in the Iranian waters of the Caspian Sea. ***Iranian J. Icthyology.*** 5(1):64-73. doi: 10.22034/iji.v5i1.257 *http://ijichthyol.org/index.php/iji/article/view/5-5/217*

102. Shepherd, B.S., A.R. Spear, A.M. Philip, D.W. Leaman, **C.A. Stepien**, O.J. Sepulveda-Villet, D.E. Palmquist, M.M. Vijayan. **2018.** Effects of cortisol and lipopolysaccharide on expression of select growth-, stress- and immune-related genes in rainbow trout liver. ***Journal of Shellfish Immunology*** 74:410-418. *DOI: 10.1016/j.fsi.2018.01.003*

101. Klymus, K.E.*, N.T. Marshall*, & **C.A. Stepien****. **2017.** Environmental DNA (eDNA) metabarcoding assays to detect invasive invertebrate species in the Great Lakes. ***PLOS One***. *http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0177643*

100. Trebitz, A., J. Hoffman, J. Darling, E. Pilgrim, J. Kelly, E. Brown, W. Chadderton, S. Egan, E. Grey, S. Hashsham, K. Klymus*, A. Mahon, J. Ram, M. Schultz, **C.A. Stepien,** J. Schardt. **2017.** Early detection monitoring for aquatic non-indigenous species: Optimizing surveillance, incorporating advanced technologies, and identifying research needs. ***Journal of Environmental Management.*** 202(1): 299-310 *doi: 10.1016/j.jenvman.2017.07.045 http://www.sciencedirect.com/science/article/pii/S0301479717307223*

99. Ke, Q., W. Weaver, A. Pore, B. Gorgoglione, J. H. Wildschutte, P. Xiao, B.S. Shepherd, A. Spear, M. Krishnamurthy, **C.A. Stepien**, V.N. Vakharia, D.W. Leaman. **2017.** Role of Viral Hemorrhagic Septicemia virus (VHSv) matrix (M) protein in suppressing host transcription. ***Journal of Virology***. *http://jvi.asm.org/content/early/2017/07/20/JVI.00279-17.short?rss=1&cited-by=yes&legid=jvi;JVI.00279-17v1*

98. Ouyang, Z., C.Shao, H. Chu, R. Becker, T. Bridgeman, **C. Stepien**, R. John, J. Chen. **2017**. The effect of algal blooms on carbon emission in western Lake Erie: an integration of remote sensing and eddy covariance measurements. ***Remote Sensing***. 9(1):44 *doi:10.3390/rs9010044 http://www.mdpi.com/2072-4292/9/1/44*

97. Snyder, M.E.* & **C.A. Stepien**** (co first-authors). **2017.** Genetic patterns across an invasion's history: a test of change versus stasis for the Eurasian round goby in North America. ***Molecular Ecology*****.** *doi: 10.1111/mec.13997 (published online early) Featured on NOAA PMEL website: http://www.pmel.noaa.gov/featured-publication/temporal-invasion-genetics-highly-successful-introduced-species*

96. Stepien, C.A,** S.I. Karsiotis*, T.J. Sullivan*, & K.E. Klymus**. 2017.** Population genetic structure and comparative diversity of smallmouth bass: Congruent patterns from two genomes. ***Journal of Fish Biology*****.** 90(5): 2125–2147 *doi:10.1111/jfb.13296. http://onlinelibrary.wiley.com/wol1/doi/10.1111/jfb.13296/full*

95. Stepien, C.A.**, F. Calzonetti, J.M. Bossenbroek, K.P. Czajkowski, T.L. Bollin & C.L. Gruden. **2017.** Enhancing environmental sustainability through a university field station. Ch. 7, pp. 111-147 In: A. Kumar and D. Kim (eds). *Sustainability Practice and Education on University Campuses and Beyond. Bentham Science Publishers, Sharjah, UAE. eISBN(Online): 978-1-68108-471-8, ISBN (Print): 978-1-68108-472-5 https://www.utoledo.edu/nsm/lec/research/glgl/publications/LECbookchapter.pdf*

94. Haponski, A.E.* & **C.A. Stepien**. 2016.** Two decades of genetic consistency in a reproductive population in the face of exploitation: Patterns of adult and larval walleye (*Sander vitreus*) from Lake Erie's Maumee River. ***Conservation Genetics.*** *DOI 10.1007/s10592-016-0866-x*

93. Kvach, Y, Y. Kutsoken, **C.A. Stepien,** M. Markovyck**. 2016.** Role of the invasive Chinese sleeper *Percottus glenii* Cybowi 1877 (Actinopterygii: Odeontobutidae) in the distribution of fish parasites in Europe: new data and a review. ***Biologia.*** 71(8): 941-951. *doi: 10.1515/biolog-2016-0112*

PUBLICATIONS, Continued (* = students, postdocs, and techs sponsored by *C. A. Stepien*)
(=*Stepien as corresponding author and lead P.I.*)**

92. **Stepien, C.A**.**, L.R. Pierce*, D. Leaman, M. Niner*, B. Shepherd. **2015.** Gene diversification of an emerging pathogen: A decade of mutation in a novel fish Viral Hemorrhagic Septicemia (VHS) substrain since its first appearance in the Laurentian Great Lakes"**. *PLoS One*** *(Public Library of Science).* *DOI: 10.1371/journal.pone.0135146.* https://www.utoledo.edu/nsm/lec/research/glgl/publications/Stepienetal.2015_VHS_Evo_PLOS_One.pdf

91. Shao, C, J. Chen, **C.A. Stepien**, H. Chu, Z. Ouayang, T.B. Bridgeman, K.P. Czajkowski, R.H. Becker, & R. John. **2015.** Diurnal to annual changes in latent, sensible heat, and CO2 fluxes over a Laurentian Great Lake: A case study in western Lake Erie. ***Journal of Geophysical Research – Biogeosciences***. 120(8):1587-1604. *DOI:10.1002/2015JG003025* **Selected as AGU Research Spotlight:** https://eos.org/research-spotlights/great-lakes-hold-sway-over-water-and-carbon-cycling

90. **Stepien, C.A**.**, J. Behrmann-Godel & L. Bernatchez. **2015.** Evolutionary relationships, population genetics, and ecological and genomic adaptations of perch (*Perca*) Ch. 2, pp. 7-46. In: Couture, P. & G. Pyle. (Eds.). *Biology of Perch.* CRC Press. *ISBN 978-1-4987-3032-7.* https://www.utoledo.edu/nsm/lec/research/glgl/publications/Stepienetal2015PerchEvol.pdf

89. **Stepien, C.A**.** & A.E. Haponski* **2015.** Taxonomy, distribution, and evolution of percid fishes. Chapter 1, pp. 3-60 In: *Biology and Culture of Percid Fishes-Principles and Practices.* Kestemont, P., K. Dabrowski & R.C. Summerfelt (Eds.). Springer. *ISBN 978-94-917-7227-3, doi 10.1007978-94-017-7227-3.* http://www.utoledo.edu/nsm/lec/research/glgl/publications/StepienHaponski2015_PercidCh1.pdf

88. **Stepien, C.A**.**, O.J. Sepulveda-Villet* & A.E. Haponski*. **2015**. Comparative genetic diversity, population structure, and adaptations of walleye and yellow perch across North America. Chapter 25, pp. 643-690 In: *Biology and Culture of Percid Fishes-Principles and Practices.* Kestemont, P. , K. Dabrowski & R.C. Summerfelt (Eds.). Springer. *ISBN 978-94-917-7227-3, doi 10.1007978-94-017-7227-3.* http://www.utoledo.edu/nsm/lec/research/glgl/publications/StepienEtAl2015_PercidCh25.pdf

87. Kvach, Y., V. Boldyrev, R. Lohner & **C. A. Stepien. 2015**. The parasite community of gobiid fishes (Actinopterygii: Gobiidae) from the Lower Volga River region. ***Biologia*** *(Section Zoology),* 70**(**7): 948–957. *DOI: 10.1515/biolog-2015-0108.* http://www.utoledo.edu/nsm/lec/research/glgl/publications/Kvachetal2015gobypar.pdf.

86. Sullivan, T.J.* and **C.A. Stepien.** 2015.** Temporal population genetic structure of yellow perch spawning groups in the lower Great Lakes**. *Transactions of American Fisheries Society*.** 144:211–226. *DOI: 10.1080/00028487.2014.982260* http://www.utoledo.edu/nsm/lec/research/glgl/publications/SullivanStepien2015_YP_TAFS.pdf

85. Roseman, E.F., P.A. Thompson, J. M. Farrell, N. E. Mandrak & **C. A. Stepien**. **2014**. Great Lakes connecting channels. Special Issue. ***Journal of Great Lakes Researc***h. 40 (2014): 1–6. *doi:10.1016/j.jglr.2014.03.003* http://www.utoledo.edu/nsm/lec/research/glgl/publications/Rosemanetal_HECintro_JGLR_2014.pdf

84. Haponski, A.E.* & **C.A. Stepien.** 2014.** A population genetic window into the past and future of the walleye *Sander vitreus*: Relation to historic walleye and the extinct blue pike variant. ***BMC Evolutionary Biology.*** 2014, **14**:133. http://www.biomedcentral.com/1471-2148/14/133

83. Haponski, A.E.*, H. Dean,*, B. Blake* & **C.A. Stepien**. 2014.** Genetic history of walleye (*Sander vitreus*) spawning in Lake Erie's Cattaraugus Creek: A comparison of pre- and post-stocking. ***Transactions of the American Fisheries Society.*** 143:1295–1307 *DOI: 10.1080/00028487.2014.935477* http://www.utoledo.edu/nsm/lec/research/glgl/publications/Haponski_et_al2014_WA_TAFS.pdf

82. Sullivan, T.J.* & **C.A. Stepien.** 2014.** Genetic diversity and divergence of yellow perch (*Perca flavescens*) spawning populations across the Huron-Erie Corridor, from Lake Huron through western Lake Erie. ***J. of Great Lakes Research***. 40(2014): 101-109. *doi:10.1016/j.jglr.2012.12.004* http://www.utoledo.edu/nsm/lec/research/glgl/publications/SullivanStepien2014_HECYP_JGLR.pdf

81. Haponski, A.E.* & **C.A. Stepien.** 2014.** Genetic connectivity and diversity of walleye (*Sander vitreus*) spawning groups in the Huron-Erie Corridor. ***J. of Great Lakes Research***. 49 (2014): 89-100. http://dx.doi.org/10.1016/j.jglr.2012.12.006 http://www.sciencedirect.com/science/article/pii/S0380133012002407

80. **Stepien, C.A**.**, I.A. Grigorovich, M.A. Gray*, T.J. Sullivan*, S. Yerga-Woolwine* & G. Kalacyi*. **2013.** Evolutionary, biogeographic, and population genetic relationships of Dreissenid mussels, with revision of component taxa. 3

79. Pierce, L.R.*, J.C. Willey, E.L. Crawford*, D.W. Leaman, V.V. Palsule*, M. Faisal, R.K. Kim, B.S. Shepherd & **C.A. Stepien.** 2013.** A new StaRT-PCR approach to detect and quantify fish Viral Hemorrhagic Septicemia virus (VHSv): Enhanced quality control with internal standards. ***J. of Virological Methods***. 189:129-142. *http://www.utoledo.edu/nsm/lec/research/pdfs/Pierce_et_al_2013_JVM.pdf*

PUBLICATIONS, Continued (* = students, postdocs, and techs sponsored by *C. A. Stepien*)
(=*Stepien as corresponding author and lead P.I.*)**

78. Kocovsky, P., T.J. Sullivan*, C. Knight & **C.A. Stepien**. **2013.** Genetic and morphometric differences demonstrate fine-scale population substructure of the yellow perch *Perca flavescens*: Need for redefined management units. ***Journal of Fish Biology.*** 82(6): 2015-2030. *doi:10.1111/jfb.12129* *http://onlinelibrary.wiley.com/doi/10.1111/jfb.12129/pdf*

77. Haponski, A.E.* & **C.A. Stepien.** 2013.** Phylogenetic and biogeographical relationships of the *Sander* pikeperches (Perciformes: Percidae): Patterns across North America and Eurasia. ***Biological J. Linnean Society***. 110(1): 156-179. *http://onlinelibrary.wiley.com/doi/10.1111/bij.12114/pdf*

76. Pierce, L.R.*, J.C. Willey, E.L. Crawford*, V.V. Palsule*, B.S. Shepherd & **C.A. Stepien**. 2013.** Accurate detection and quantification of the fish Viral Hemorrhagic Septicemia virus (VHSv) with a two-color fluorometric real-time PCR assay. ***PLoS One.*** 8(8): e71851. *doi:10.1371/journal.pone.0071851* *http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0071851*

75. **Stepien, C.A.**** & M.E. Neilson*. **2013.** What's in a Name? Taxonomy and nomenclature of invasive gobies in the Great Lakes and beyond. ***Journal of Great Lakes Research.*** 39(4):555-559. *http://dx.doi.org/10.1016/j.jglr.2013.09.020*

74. **Stepien, C.A.**,** J.A. Banda*, D.M. Murphy* & A.E. Haponski*. **2012.** Temporal and spatial genetic consistency of walleye (*Sander vitreus*) spawning groups. ***Transactions of the American Fisheries Society***. 141:660-672. *doi:10.1080/00028487.2012.683474* *http://www.utoledo.edu/nsm/lec/pdfs/Stepien_et_al_2012_TAFS_walleye_Lake_Erie.pdf*

73. Karsiotis, S.I.*, J.E. Brown*, L.R. Pierce* & **C.A. Stepien.** 2012.** Salinity tolerance of the invasive round goby: experimental implications for seawater ballast exchange and spread to North American estuaries. ***Journal of Great Lakes Research***. 38:121-128. *doi:10.1016/j.jglr.2011.12.010* *http://www.utoledo.edu/nsm/lec/pdfs/karsiotis_2012.pdf*

72. Pierce, L.R.* & **C.A. Stepien.** 2012.** Evolution and biogeography of an emerging quasispecies: Diversity patterns of the fish viral hemorrhagic septicemia virus (VHSv). ***Molecular Phylogenetics and Evolution***. 63:327–341. *doi:10.1016/j.ympev.2011.12.024* *http://www.utoledo.edu/nsm/lec/research/glgl/publications/Pierce and Stepien MPE 2012 published.pdf*

71. Sepulveda-Villet, O.J.* & **C.A. Stepien.** 2012.** Waterscape genetics of the yellow perch (*Perca flavescens*): Patterns across large connected ecosystems and isolated relict populations. ***Molecular Ecology***. 21(23): 5795-2826. *doi:10.1111/mec.12044* *https://www.utoledo.edu/nsm/lec/research/pdfs/10.1111_mec.12044.pdf*

70. Kocovsky, P.M., J.A. Tallman, D.J. Jude, D.M. Murphy*, J.E. Brown* & **C. A. Stepien**. **2011**. Expansion of tubenose gobies *Proterorhinus semilunaris* into western Lake Erie and potential effects on native species. ***Biological Invasions.*** 13(12): 2775-2784. *doi: 10.1007/s10530-011-9962-5* *http://www.utoledo.edu/nsm/lec/research/glgl/publications/Kocovsky-2011.pdf*

69. Neilson, M.E.* & **C.A. Stepien.** 2011.** Historic cryptic speciation and recent colonization of Eurasian monkey gobies (*Neogobius fluviatilis* and *N. pallasi*) revealed by DNA sequences, microsatellites, and morphology. ***Diversity and Distributions***. 17:688-702. *doi:10.1111/j.1472-4642.2011.00762.x* *http://www.utoledo.edu/nsm/lec/pdfs/Neilson_Stepien_2011 Diversity_Distri_Monkey goby.pdf*

68. Feldheim, K.A., J.E. Brown*, D.M. Murphy* & **C.A. Stepien**. 2011.** Microsatellite loci for dreissenid mussels (Mollusca: Bivalvia) and relatives: Markers for assessing invasive and native species. ***Molecular Ecology Resources.*** 11:725-732. *doi: 10.1111/j.1755-0998.2011.03012.x* *http://www.utoledo.edu/nsm/lec/research/glgl/publications/Feldheimetal2011dreissenid.pdf*

67. Sepulveda-Villet, O.J.* & **C.A. Stepien**. 2011.** Fine-scale population genetic structure of the yellow perch *Perca flavescens* in Lake Erie. ***Canadian Journal of Fisheries and Aquatic Sciences***. 68:1-19. *doi:10.1139/F2011-077* *http://www.utoledo.edu/nsm/lec/research/glgl/publications/sepulveda-villet-2011.pdf*

66. Grzybowsi, M., O.J. Sepulveda-Villet*, **C.A. Stepien,** D. Rosauer, F. Binkowksi, R. Klaper, B. Shepherd, and F. Goetz. **2010.** Genetic variation of 17 wild yellow perch populations from the Midwest and East coastal United States using microsatellites. ***Transactions of the American Fisheries Society.*** 139:270-287. *doi: 10.1577/T07-276.1* *http://www.utoledo.edu/nsm/lec/pdfs/Published_TAFS_perch_paper.pdf*

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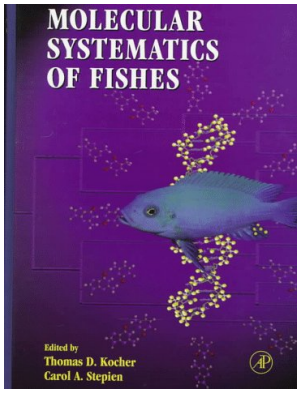

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GRANTS AND AWARDS (~$13.57 million to date as PI or co-PI)
Carol A. Stepien

***Current* (~$2.16 million as PI or co-PI)**

NOAA OAR. *Metagenomic responses of commercially important fisheries and their food chains across coastal Pacific and Alaskan waters- Enhancing the blue economy* PI: Carol Stepien (PMEL); Co-PIs: Nicholas Bond (PMEL JISAO), K. Andrews (PMEL JISAO), R. Feely (PMEL), J. Keister (U Washington). Federal Partners: AFSC, National Marine Sanctuary, Olympic Coast. $440,000, 2 years, 2018-20.

NOAA OAR. *Enhancing the blue economy through metagenomic characterization of hydrothermal vent and methane seep communities* PI: Carol A. Stepien (PMEL); Co PIs: D. Butterfield (PMEL JISAO), K. Andrews (PMEL JISAO) Federal Partner: National Marine Sanctuaries, Olympic Coast. $440,000, 2 years, 2018-20.

NOAA Washington Sea Grant. coPI (with PI J. Keister, Univ. Washington). *Metagenomic fluctuations of zooplankton and ichthyoplankton communities in the Salish Sea: Association with water chemistry.* $230,000, 2 years, 2018-2020.

US Environmental Protection Agency (USEPA). P.I. Great Lakes Restoration Initiative (GLRI). *Invasive Species Prevention of fish and mollusks from bait, outfitter, and pet stores using metagenetic methods, supply chain analyses, and public education.* Co-PIs=K. Czajkowski, A. Solocha, and T. Ackerman. GL-00E01898, $500,000, 3 years, 2016-19.
*subaward molecular genetics part to University of Washington with job change.
Public TV special: https://www.wgte.org/tv/programs/detecting-invasive-species-great-lakes

National Science Foundation (NSF). IOS (Integrated Organismal Systems), DBI-1354806. CoPI (D. Leaman=P.I.) *Collaborative Research: Gene diversity of the VHS fish virus: Evolution of cellular immune response and pathogenesis.* $550,000, 5 years, 2014-2019. Subward part to University of Washington with job change 2017.

COMPLETED GRANTS AND AWARDS (~$11.38 million); Last 10 years are detailed below

US Environmental Protection Agency (USEPA). P.I. Great Lakes Restoration Initiative (GLRI). *Invasive invertebrate species prevention, detection, and control: A new next generation sequencing assay.* GL-00E01289, $500,000, 4 years, 2014-18. Subaward part to University of Washington (coPI=T. Ackerman), 2017-18.

National Science Foundation (NSF) REU PI (Research Experiences for Undergraduates), DBI-1461124. *Using the Lake Erie Sensor Network to Study Land-Lake Ecological Linkages.* co-PI=K. Czajkowski, $350,000, 3 years, 2015-17. *http://www.utoledo.edu/nsm/lec/REU.html.* 300+ applicants for 2016. Engaged African-American, Hispanic, Native American minority students, veterans, first-generation college students in summer research program across Engineering, Biology, Environmental Sciences, Chemistry, and Public Health. (Stepien changed to collaborator, with coPI taking over in 2017, due to job change to NOAA PMEL).

USDA Agricultural Research Service, Fish Health and Aquaculture. PI. *VHS fish virus in yellow perch aquaculture*. *Co-PI: D. Leaman.* In collaboration with ARS (*B. Shepherd).* UT $861,000, 2009-18. USDA-ARS CRIS project #3655-31320-002-00D, under specific cooperative agreement #58-3655-9-748.

USEPA GLRI, PI. *Early detection DNA technology for high risk invasive fish species. Co-PI: V. Sigler.* GL-00E01149-0, $600,000, 4 years, 2012-16. (led to other USEPA awards).

National Science Foundation (NSF) PI of Gk-12 program. *Graduate fellows in high school STEM education: An environmental science learning community at the land-lake ecosystem interface.* 4 co-PIs, 8 graduate fellows/yr, 8 high school teachers/yr. *Co-PIs: T. Bridgeman, K. Czajkowski, C. Gruden, R. Becker.* NSF DGE-0742395, $2.7 million, 7 years, 2008-15. Mentored 31 graduate students from Environmental Sciences, Civil Engineering, Biology, Geography, and Geology; engaged 2500 high school students from 10 high schools, 84 science & engineering publications, 344 conference presentations, 69 synergistic activities. *http://www.utoledo.edu/nsm/lec/gk12_grant/index.html*

NSF Field Stations and Marine Labs (FSML) program, lead PI. *An environmental sensor network for the Lake Erie Center. Co-PIs: J. Chen, K. Czajkowski, R. Becker, T. Bridgeman.* NSF DBI-1034791, $350,000, 4 years, 2010-14. NSF Featured Highlight. AGU Featured Spotlight.

US Department of Agriculture, NIFA (formerly CSREES), PI. *Genetic detection, disease resistance, and population spread of the VHS fish virus in the Great Lakes. Co-PIs: J. Willey, J. Bossenbroek, D. Leaman.* OHOW-208-03256, $909,000, 7 years, 2008-15.

NOAA Ohio Sea Grant. PI. *Implementation of a rapid genetic test for the VHS fish virus*. *Co-PI: J. Willey.* R/LR-015, $180,000, 4 years, 2011-14.

National Science Foundation. PI. *DDIG (Doctoral Dissertation Improvement Grant): Phylogenetic relationships, biogeography, and genetic diversity of the VHS fish virus. For Ph.D. student L. Pierce*. DEB-1110495, $15,000, 3 years, 2011-14.

National Science Foundation, URM: *Undergraduate research and mentoring in environmental Biology at the land-lake ecosystem interface*. *Co-PI with V. Sigler (PI).* DBI-0829252, $600,000, 5 years, 2009-14.

Ohio Board of Regents & Univ. of Toledo. *Engagement of the public through citizen science: Maumee River watershed***,** CoPI. PI: K. Czajkowski. $45,000, 2015-16.

NOAA CILER (Cooperative Institute for Limnology and Ecosystems Research), PI. *A rapid and accurate DNA test for invasive fish species from water samples.* $23,000, 2013-14.

NOAA Sea Grant. *Effects of a power plant on ecosystem function in Lake Erie*. *Co-PI with C. Mayer (PI) and T. Bridgeman (co-PI)*. NA09OAR4170182, $750,000, 4 years, 2009-14.

National NOAA Sea Grant Law Center, coPI. *Legal tools and best practices for reducing harmful algae blooms in Lake Erie.* PI: K. Kilbert, coPI: J. Reutter. $35,000, 2 years, 2011-13.

NOAA Sea Grant. PI. *Development and implementation of a high-resolution data base for fishery management: Walleye and yellow perch stock structure (Parts 1 and 2)*. Ranked #1 in Ohio Sea Grant Competition. R/LR-7 & R/LR-13, $360,000, 6 years (renewed), 2004-13.

National Science Foundation. PI. Field Stations and Marine Laboratories. *FSML Planning grant for the Lake Erie Center*. *Co-PIs: C. Gruden, K. Egan, K. Czajkowski, C. Mayer.* DBI-0627254, $25,000, 2006-09; Full proposal funded for $350,000 in 2010.

National Science Foundation. PI. *Molecular systematics, biogeography, and invasion identity of Neogobiin fishes.* DEB-0456972, $300,000, 2004-9. Output: 14 papers, 44 research presentations, 2 Ph.D. students, 3 undergraduates, 1 high school student supported**.**

Additions to NSF DEB-0456972 (from previous page)***:***

- **NSF** REU Supplement for *Undergraduate Research.* DEB-0727913 $6,000, 2007-8.
- **NSF** Supplement for *visiting scientists from Russia and Ukraine*. 0630172, $10,000.
- **NSF** Supplement for *Undergraduate Research on the monkey goby*. 0620942, $7,000.

NOAA Sea Grant. PI. Knauss graduate fellowship for Ph.D. student Sepulveda-Villet*,* $50,000, 2012.

NOAA Sea Grant. PI. Knauss Graduate Fellowship for Ph.D. student Joshua Brown. $50,000, 2008-9.

NSF Research Experiences for Teachers. PI. *RET: Population genetic diversity and divergence Patterns of the rainbow darter fish in the Lake Erie watershed*; Sponsored high school environmental science teacher T. Bollin of Toledo Early College High School, 100% minority. DBI-0727913, $10,000, 2007-09 (resulted in publication with teacher).

US Environmental Protection Agency. PI. *High-resolution delineation of Lake Erie fish populations: DNA databases for resource management.* CR-83281401-0, $628,000, 2006-10.

AWARDS AND HONORS

American Association for the Advancement of Science (AAAS), Elected Fellow, 2017
Research Associate/Collaborator of the National Museum of Natural History, Smithsonian, 2018-present
Albert Nelson Marquis Lifetime Achievement Award, Who's Who in America, 2017
University of Toledo Outstanding Grantsmanship Award, 2017
American Geophysical Union, Highlighted Research Selection, 2015
Distinguished University Professor Lecturer, 2014-2016
Distinguished University Professor Appointment University of Toledo, 2012-present (Lifetime)
Highest permanent honor the University of Toledo bestows on a faculty member for earning national and/or international recognition and distinction for educational and scholarly contributions that have been transformative in their field (one of just 18 across the entire University)
NSF Highlighted Research (Climate Change Land-Lake Sensor Network)
2014 University of Toledo Sabbatical, Genetics and Genomics Research in Australia, 2013
Ohio Lake Erie Commission Outstanding Organization Award, 2011
Sigma Xi Scientific Honorary Dion D. Raftopoulos Outstanding Researcher Award, 2010
Outstanding Faculty Research Award. University of Toledo, 2008
Editor's Awards for Service to the Journal of Great Lakes Research, 2007 and 2011
Elected to Board of Directors, International Association for Great Lakes Research, 2004-2007
Service Award from International Association for Great Lakes Research, 2007
League of Women Voter's Environmental Award, 2007
NOAA Research Spotlight Zebra Mussel Genetics, http://www.oar.noaa.gov/spotlite/archive
Who's Who in America (1990 through present)
Who's Who in Science and Engineering
Who's Who of American Women
Who's Who in American Colleges and Universities
Who's Who in American Education
American Men and Women of Science
George B. Mayer Assistant Professor Chair of Urban and Environmental Studies
Stoye first place graduate student best paper award in Ichthyology,
American Society of Ichthyologists and Herpetologists annual conference
First place research presentation award in Environmental sciences. Southern California Academy of Sciences Annual conference
Best undergraduate student paper award, Beta Beta Beta Biological honorary society annual conference

Molecular Phylogenetics and Evolution, Editorial Board, 1999-present
Ecological Processes (Associate Editor, J. Chen Editor-in-Chief), 2016-present.
Biological Invasions**,** Associate Editor (Genetics), 2009-2017.
Journal of Great Lakes Research, Associate Editor (Genetics & Fish Ecology), 1998-2013, Special Issue Editor, 2012-2017.
Edited ***Molecular Systematics of Fishes*** 1997, Academic Press, (with co-editor T. Kocher)

BOARD OF DIRECTORS
International Association for Great Lakes Research (IAGLR**)** 2004-2007 (elected, 3 year term)

REVIEWER EXPERIENCE

Federal Grant Review Panels
NSF, National Science Foundation, Integrated Organismal Systems Panel, Evolutionary Genetics Panels, Sustainability Research Networks Panel, Biological Oceanography Panel, Systematic Biology Panels (including panels in 2016 and 2018).
NOAA OER (Ocean Explorations & Research) Panel (2018)
USDA Aquaculture Panel (2016).
National Oceanic and Atmospheric Administration (NOAA), Sea Grant Biotechnology
AAAS, American Association for the Advancement of Science, Aquatic Ecology and Technology Grant Panel
USGS, **U.S. Geological Survey**, Biological Resources Discipline, Global Change Program.

University Tenure & Promotion External Reviewer
University of South Carolina
New Mexico State University
California State University Long Beach
Miami University

Grant Reviewer and Panelist
AAAS, Aquatic Ecology and Technology
NSF, Integrated Organismal Systems (Panels and grants), Systematic Biology (Panels and grants) and Biological Oceanography Division (Panels and grants), Sustainability Research Networks (Panel and grants), Molecular and Cellular Biology (Panel and grants), including 2018 panels
USGS Global Warming grants and panel
Austrian National Science Foundation
National Geographic Society Research
NSERC, Natural Sciences and Engineering Research Council of Canada
NOAA Ocean Exploration Program (Panel and Grants)
NOAA Sea Grant College Program, U.S. (Panel), State Reviews: Wisconsin, Michigan, South Carolina, Florida, New York (New York State Panels)
Great Lakes Fishery Commission
Great Lakes Fishery Trust

Scientific Journal Reviewer
Biological Invasions (assoc. editor 2009-present)
Biological Journal of the Linnean Society
Canadian Journal of Fisheries and Aquatic Sciences
Canadian Journal of Zoology
Copeia (American Society of Ichthyologists and Herpetologists)
Diversity and Distributions

Ecology and Evolution
Ecological Processes
Environmental Biology of Fishes
Evolution (Society for the Study of Evolution)
Fisheries (American Fisheries Society)
Freshwater Biology Genetics
Heredity
Hydrobiologia
Journal of Biogeography
Journal of Experimental Marine Biology and Ecology
Journal of Fish Biology
Journal of Great Lakes Research; Associate Editor 1998-present
Journal of the Marine Biological Association of the United Kingdom
Journal of Virological Methods
Marine Biology
Molecular Biology and Evolution
Molecular Ecology
Marine Ecology Progress Series
Molecular Phylogenetics and Evolution; Editorial Board 1999-present
North American Journal of Fisheries Management
PLOS One
Prairie Naturalist
Scientific Reports @Nature.Com
Transactions of the American Fisheries Society
U.S. Fishery Bulletin
Zoological Journal of the Linnean Society

MEMBERSHIPS AND SERVICE IN PROFESSIONAL SOCIETIES

American Association for the Advancement of Science (AAAS), elected fellow 2017 (2016 nomination)
American Association of University Women (AAUW), keynote speaker
American Fisheries Society; keynote speaker, symposium organizer, reviewer, best paper judge Student Travel Award committee (Genetics Section)
American Society of Ichthyologists and Herpetologists (ASIH); Symposium coordinator, Best paper award judge, Invited panelist speaker, Graduate student mentoring program
American Women in Science (AWIS)
European Society of Evolutionary Biology
Great Lakes Aquatic Ecosystem Research Consortium (GLAERC); institutional representative
International Association for Great Lakes Research (IAGLR); Board of Directors 2004-2007, Genetics editor 2002-2012, Special issues editor 2002-present; local committee annual conference 1999, symposium coordinator (1999-present), reviewer, best paper judge (1998-present), chair and coordinator of 2009 annual conference
Ohio Academy of Sciences (OAS), symposia, reviewer
Sigma Xi Scientific Honorary Society, session chair, Toledo chapter President (2013-2015), Science Café series developer and coordinator (2013-present), National conference representative 2015
Society for Freshwater Science (SFS)
Society for the Study of Evolution (SSE)
Society of Systematic Biologists (SSB)

RESEARCH PRESENTATIONS (279+ conference presentations & seminars given by *Carol Stepien*)

Presentations to Scientific Societies and Research Conferences in Last 10 Years

Ocean Sciences Meeting, 2018, Portland OR (symposium talk in *Rediscovering marine biodiversity: Progress, promise, and challenges of meta-barcoding of Microbes to Mammals*), *"Targeted metagenomic assays to understand marine community responses in species composition, diversity, and population genetics"*

Alaska Marine Sciences Symposium, 2018, Anchorage "*Metagenomic assays to assess Alaskan marine community species identities, diversity, representation, and population patterns"*

American Fisheries Society, 2018. Atlantic City (symposium talk and 3 by students, 2 competing for best student paper awards), 2017 (2 invited orals at symposia in Tampa, 1 other by student competing for best paper award), "*Understanding species composition, diversity, and population genetics of entire communities through metagenomics"* and "*Population genetic characterization of silver carp invasion fronts approaching the Great Lakes"*, 2016 in Kansas City (oral presentation), 2015 in Portland OR (2 presentations), 2014 in Quebec (2 invited symposia talks, 1 student talk), 2013 in Little Rock, AR (2 invited symposium presentations, co-led 2 symposia, 2 student talks), 2012 in Minneapolis (2 invited symposium presentations), 2011 in Seattle (3 invited symposium presentations, poster, talk by student), 2010 in Pittsburgh (invited symposium presentation, talk, 3 posters, talk by student), 2008 in Ottawa (talk, 2 talks by students)

International Association for Great Lakes Research (IAGLR) annual conference, 2017 at Detroit (lead of symposium session, 1 talk + 4 students talks), 2016 (lead 2 symposia sessions, talk + 4 student talks), University of Guelph (talk + 3 student talks), 2015 at U. Vermont (talk + 2 others with students, co-led session), 2013 at Purdue U. (talk, 2 posters, 2 student talks), 2011 in Duluth (talk, poster, 3 student talks, poster with students), 2010 in Toronto (talk, 2 posters), 2009 at Univ. Toledo (3 talks, 5 talks by students, 4 posters with students), 2008 at Univ. of Trent (talk, 3 others with students), 2007 at Pennsylvania State Univ. (3 talks, 3 others with grad students, lead for session on fisheries and fish ecology), 2006 at Univ.Windsor (talk, 5 others with postdoc +4 grad students)

International Conference on Aquatic Invasive Species, 2017 in Tampa (talk + another by student) 2016 in Winnipeg (talk + 3 talks by students), Session lead on eDNA, 2013 in Niagara Falls (2 talks, poster, 2 student talks, 1 student poster), 2010 in San Diego (2 talks, poster), 2009 in Montreal (talk, poster), 2006 in Key Biscayne (talk, poster)

World Aquaculture Conference, 2016 in Las Vegas (2 talks; percid fish population genetics and genomics; VHS fish virus in the Great Lakes and aquaculture)

Society for Freshwater Sciences, 2014 in Portland OR (2 invited symposium talks, environmental DNA and large genomic/genomic data sets, 1 student talk)

American Society of Ichthyologists and Herpetologists (ASIH) annual conferences, 2014 in Chattanooga, TN (2 talks, including invited symposium), 2009 Portland (talk), 2007 St. Louis (talk), 2006 New Orleans (talk, poster), 2005 Tampa (talk, poster)

International Marine Bioinvasions Conferences, 2014 in Oman (1 presentation, 1 poster)

EcoSummit (4th International EcoSummit for Ecological Sustainability, October 2012 in Columbus OH (1 talk and 1 poster by Stepien, 2 talks by students with Stepien as co-author, 3 posters by students with Stepien as co-author).

Society for the Study of Evolution (SSE), 2012 in Ottawa, Canada (talk, 2 talks by students co-authored with Stepien), 2006 in Stony Brook, NY (talk, poster, plus talk with postdoc

Great Lakes Fishery Commission annual Lake Committee conference., 2009

Lake Erie Millennium Conference, 2010 (4 posters), 2008 (talk, 3 posters), 2006 in Windsor, Ontario (talk, 2 posters)

Ohio Division of Wildlife annual meetings, 2014 (2 talks by students), 2013 (2 talks by students, 2 posters), 2012 (2 talks by students, 2 posters), 2011 (2 talks, 2 student posters), 2010 (4 student posters), 2009 (4 posters by students), 2008 (4 posters by students), 2008 (5 posters by students), 2007 (4 talks, 3 by students, poster by students), 2006 (1 talk by postdoc, 4 posters by students)

Invited Plenary and Research Departmental Seminar Presentations at Universities, Museums & Agencies

Research Seminar, NOAA Alaskan Fisheries Science Center, Auke Bay, Juneau, AK Sept. 5, 2018
Research Seminar, NOAA Great Lakes Environmental Research Lab, August 1, 2018.
Invited Plenary, SIBIC2018, the VII Congress of the Iberian Society for Ichthyology, Faro, Portugal, June 14, 2017. *Using Metagenomics to Assess Entire Fish Communities at all Life Stages: Species Diversity, Composition, Abundances, and Population Genetics*
NOAA 'Omics Conference, Atlantic Oceanographic and Meterological Laboratory, Nov. 21, 2017.
Friday Harbor Laboratory, University of Washington, October 18, 2017.
National Marine Fisheries Service, Northwest Fisheries Science Center Monster Jam Seminar, October 12, 2017. *Resolving the dyamics of marine & aquatic community responses to environmental changes using metagenomics*.
Pacific Marine Environmental Lab, NOAA, Invited Seminar, July 6, 2017. *Discerning responses of marine communities to environmental conditions across our oceans using metagenomics.*
University of Washington Biological Oceanography Lunch Invited Seminar, May 2, 2017, *Understanding population genetic & genomic patterns of marine & aquatic communities over time & space.*
Hatfield Marine Science Center, Oregon State University, Invited Seminar, May 4, 2017
NMFS, Northwest Fisheries Science Center, 2017. *How metagenomics may assess ocean acidification effects on biological communities.*
NOAA Pacific Marine Environmental Lab, 2016. *Marine community identities, diversity, adaptations, and linkages: Metagenomic patterns across time and space.*
University of Central Florida, 2016. *Invasive species genetics and genomics.*
Texas A&M University, 2016. University of Maryland, 2016. University of Nebraska, 2016.
University of North Carolina, 2015.
University of Texas, San Antonio. November, 2014. *Environmental challenges facing our Great Lakes: Leading to the Toledo water crisis.*
University of Toledo, October, 2014. Distinguished University Professor Award Lecture. *Understanding our Great Lakes Fishes with DNA.*
Florida International University. June 2013.
University of Melbourne, Australia. March 5, 2013.
Victoria Museum, Melbourne, Australia. March 4, 2013.
University of Tasmania, Australia. March 1, 2013.
United Arab Emerites Environmental Agency, January 2013. *Evaluating the genetic stock structure of fishes: Comparisons between the Arabian Gulf and the North American Great Lakes.*
University of Warsaw, Poland, January 2013
University of Buffalo. *Population genetics of invasive mussels and gobies over time and space.* 2011.
Sigma Xi Scientific Honorary, Dion D. Raftopoulos/Sigma Xi Award for Outstanding Research Lecture. University of Toledo, 2010
University of Toledo, Law School. *Invasive species and legal questions.* 2010
University of Toledo, Dept. of Chemistry. *Lake Erie Center research and invasion genetics.* 2009
Russian Academy of Sciences, at St. Petersburg, Russia and in Moscow, Russia. 2009
Bowling Green University, NSF SETGO program. *Career insights of a marine biologist.* 2009, 2013.
Keynote Speaker at 38th Annual Meeting of the Commonwealth of Pennsylvania University Biologists, Tom Ridge Environmental Center, 2007.
US Geological Service, Ann Arbor, 2007.
New Mexico State University; Bowling Green State University
Grand Valley State University, Michigan
Bowling Green University, *Molecular genetics and systematic investigations of fishes, with comments on mentorship of women in science.*
Odessa University, Ukraine, *The genetics of species invasions.*
Stone Laboratory, Ohio State University seminar
Beckman Sequencing Conference, University of Pittsburgh
University of Akron, Ecology lunch seminar, Department of Biology seminar
Great Lakes Environmental Research Laboratory (GLERL), Ann Arbor, MI
John Carroll University; Kent State University

Invited Plenary and Research Departmental Seminar Presentations at Universities, Museums & Agencies, Continued.

Woods Hole Oceanographic Institute
Case Western Reserve Univ, Genetics Dept., Medical Schl., Biology Dept. (5 seminars)
University of North Carolina; University of Minnesota; University of Louisville
Ohio Wesleyan University; Heidelberg College
University of Florida, Gainesville; University of South Florida
Smithsonian Institution, Department of Molecular Systematics
University of Madeira, Portugal (3 lecture mini-course on *Genetics and Evolution*)
University of Tokyo, Kochi University, Hakkodate University, Japan
Scripps Institution of Oceanography, University of California, 2014 (and 4 others)
Colorado State University; University of Kansas; Ohio University
University of Massachusetts, Boston; University of North Dakota; Tulane University
American Museum of Natural History, New York
University of California, Santa Cruz; California State University, Fullerton
University of Texas, Austin; Los Angeles County Museum of Natural History
San Diego County Museum of Natural History; San Diego State University
Instituto de Oceanologia, Universidad del Valparaiso, Chile
Instituto de Pesces Nacional, Argentina
Hubbs Marine Research Institute, San Diego
University of Southern California; University of San Diego
Chesapeake Biological Laboratory, University of Maryland

RESEARCH ADVISOR

Current Ph.D. Students, under Stepien as Lead Advisor

Nathaniel Marshall, M.S. 2014-present. The University of Toledo. Projected Dissertation: *Metagenetic Analyses of Native and Invasive Mollusk Communities from Environmental Samples, with an Ecological Case Study on Invasive Dreissenids.* Recipient of 2015 Malacological Society of London Travel Award £500 to present at 2nd International Meeting on Biology and Conservation of Freshwater Bivalves, October 2015. Presentations at Midwest Graduate Research Symposium (2015, 2016), IAGLR (2016, 2017), ICAIS (2017), AFS (2018, projected). 2016-17 Bain Scholarship from the Carey Foundation, Friends of Lake Erie Center Ph.D. student award (2016). Whiteford Memorial Scholarship (2017). IAGLR Scholarship (2018). Wright Scholarship, Genetics Section of American Fisheries Society (2018). Paper published (*PLOS ONE* 2017) and another in review; both as co-author with Stepien. Another paper in review as lead author. Two others anticipated from dissertation.

Megan Niner, M.S. 2014-present. The University of Toledo. Projected Dissertation: *Viral Hemorrhagic Septicemia Virus Occurrence and Evolution in the Laurentian Great Lakes*. IAGLR (International Assoc. for Great Lakes Research) Research Scholarship award (2015). Co-author of PLOS One paper with Stepien (2015). Presentations at Midwest Graduate Research Symposium (2016, 2017, 2018), Ohio Research Review (2015, 2016), IAGLR (2017), AFS (2018). Two papers anticipated.

Matthew Snyder. 2013-present. The University of Toledo. Projected Dissertation: *Species Detection, Population Genetics, and Genomic Patterns of Invasive Gobies over Time and Space*
Full Graduate Fellowship Scholarship (stipend, tuition) & fees award from University of Toledo (2015-2020). 2015 Paul W. Rodgers (IAGLR) Scholarship Award for Fisheries Science. Friends of Lake Erie Center Ph.D. student award (2016). 2017 & 2018 Presentations at American Fisheries Society (one of 12 selected to compete for best student paper award; Great Lakes Fishery Commission Travel Scholarship); Sigma Xi best student poster award (2018). Research Presentations (2015, 2016) at Int. Conf. Aquatic Invasive Species, IAGLR (2015, 2017), Midwest Graduate Research Symposium (2015, 2016), and Ohio Research Review (2015). Lead-author in *Molecular Ecology* co-first-authored with Stepien. One other published (North American Association of Fishery Management), another in press as co-author with Stepien (2018, *Aquatic Invasions)*, another in review as co-author with Stepien, 2 remaining anticipated from thesis.

Graduated Ph.D. Students, under Stepien as Lead Advisor:

Lindsey Pierce, Ph.D. 2013. The University of Toledo. Dissertation: *Evolution and detection of the fish Viral Hemorrhagic Septicemia virus (VHSv).* Oral presentations at International Joint Evolution Conference, Ottawa (2012), Evolution Conference, Marseilles France (2012), International EcoSummit Conference (2012), American Fisheries Society (2nd place best paper award), Sigma Xi (2 best paper awards), IAGLR, Midwest Fish and Wildlife Conference, Ohio Fish and Wildlife Management Association (talk 2011, best poster award). NSF Gk-12 fellow 2010-2012. IAGLR Scholarship 2010, Best Graduate Woman in STEM, U Toledo 2011, NSF Doctoral Dissertation Improvement Grant 2011-13. Papers published in *Molecular Phylogenetics and Evolution* 2012*, J. Virological Methods* 2013, *PLOS-One* 2013 (as lead, all co-authored by Stepien), another as co-author in *Journal of Great Lakes Research*. Co-Authored 2015 paper with Stepien *PLOS-One*. Now: Research associate, Cleveland Clinic on Malaria Evolution.

Amanda Haponski, Ph.D. 2013. The University of Toledo. Dissertation: *Evolutionary, biogeographic, and population genetic patterns of walleye and other Sander: Relationships across continents, corridors, and spawning sites.* Oral research presentations: International Joint Evolution Conference, Ottawa (2012; Travel Award), Evolution Conference in Marseilles France (2012), International EcoSummit Conference (2012), Ohio Academy of Sciences, Ohio Division of Wildlife, IAGLR, Great Lakes Fishery Commission, Midwest Fish & Wildlife Conference, Sigma Xi. Papers published as lead author with Stepien as co-author (*Molecular Phylogenetics and Evolution* 2008, *J. Fish Biology,* 2009, *J. Great Lakes Research*, 2014, *Biological J. Linnean Society* 2013), 3 as co-author to Stepien *(Mol. Phyl. Evol.* 2010*, Mol. Ecol.* 2009, *Great Lakes Commission* 2010). IAGLR Scholarship, Sigma Xi Grant, Norman Baldwin Fishery Science IAGLR Scholarship, Visiting student at US National Museum, Smithsonian Institution, NSF Deep Fin Scholarship. NSF Gk-12 fellow. Defended June 2013. After: Postdoctoral fellow in Stepien lab (2013-2014). Now: postdoc in University of Michigan mollusk lab (2015-present).

Osvaldo Jhonatan Sepulveda Villet, Ph.D. 2011. The University of Toledo. Dissertation: *Population genetic structure and biogeographic patterns in the yellow perch Perca flavescens.* Oral presentations: Lake Erie Yellow Perch Task Force, Great Lakes Fishery Commission, Sigma Xi conferences (Best paper award), IAGLR, ASIH, AFS (one of 20 selected to compete for best paper). Posters: Ohio Division of Wildlife, IAGLR. Lead author of 3 papers with Stepien (*J. Great Lakes Research* 2009, *Canadian J. Fisheries and Aquatic Sciences* 2011, *Molecular Ecology* 2012). 4 co-authors with Stepien (*Trans. Amer. Fish. Soc., Molecular Ecology, Great Lakes Commission*). IAGLR scholarship. NSF Gk-12 fellow, 2008-10. NOAA Sea Grant Knauss Fellow 2012, Washington, D.C. ARS USDA Postdoctoral Researcher, Univ. Wisconsin, Milwaukee, 2013-4. Current: Asst. Professor of Aquaculture. University of Wisconsin. Co-authored rainbow trout paper with Stepien as another co-author in 2018.

Matthew E. Neilson, Ph.D. 2009. Dissertation: *Systematics and biogeography of Ponto-Caspian gobies*. The University of Toledo. Research Presentations: Risk Analysis of Invasive species conference, Ohio Division of Wildlife, Sigma Xi, International Assoc. Great Lakes Research, American Soc. Ichthyologists & Herpetologists, Borok 2 conference in Russia, Ohio Academy of Sciences. Lead author of 3 papers with C. Stepien (*Biological J. Linnean Society* 2009*, Molecular Phylogenetics and Evolution* 2009, *Diversity and Distributions* 2011), plus 2 other co-authorships (*Molecular Ecology Resources, Risk Analysis*). IAGLR 2005 scholarship. NSF Deep Fin Travel award to Russian Academy of Sciences 2008. Present: USGS Scientist, Gainesville, FL. Serving on Stepien's current Ph.D. student's Ph.D. Committee.

Graduated Ph.D. Students, under Stepien as Lead Advisor, Continued:

Joshua E. Brown, Ph.D. 2009. Dissertation: *Genetic strategies of invasive mussels and gobies in the Great Lakes*. The University of Toledo. Poster presentations at Risk Analysis of Invasive species conference, Ohio Division of Wildlife, Aquatic Invasive Species Conference. Talk presentations for Ecosystem Research ERF, Sigma Xi meetings, IAGLR (Best paper award), ASIH, Ohio Division of Wildlife, Ohio Academy of Sciences, American Fisheries Society (Selected as one of 20 to compete for best student paper award). Lead author of 3 papers published with Stepien (*Molecular Ecology* 2008, 2009, *Biological Invasions* 2010*),* and 4 others as co-author (*J. Great Lakes Res.* 2011, *Risk Analysis* 2005*, Molecular Ecol. Res.* 2008, 2011). Awarded IAGLR scholarship in 2006. 2009-10 NOAA Sea Grant Knauss Fellow, Washington, D.C. Present: Employed by NOAA Sea Grant Research Office, Washington, D.C.

Joseph E. Faber, Ph.D. 1997. Case Western Reserve University. *Dissertation: Population genetics, biogeography, and systematics of walleye*. 5 research presentations, 3 publications from Ph.D. dissertation co-authored with Stepien, 2 as lead author (*Mol. Phyl. Evol.* 1998*, Mol. Ecol.* 1998*, Mol. Syst. Fishes* 1987). Presently: Associate Professor at Ohio University, Lancaster branch campus, OH.

Postdoctoral Scholars as Primary Advisor

Katy Klymus, Ph.D. 2014-2016. *Environmental DNA and Next-generation sequencing of invasive species in the Great Lakes.* Presentations at American Fisheries Society, IAGLR, Internat. Assoc. Aquat. Invasive Species. Lead author of 2017 *PLOS ONE* paper with Stepien as co-author, Co-authored paper 2017 with Stepien as lead author in *Journal of Fish Biology*, another paper as co-author in 2017. Currently employed at USGS, Columbia MO.
https://www.cerc.usgs.gov/StaffMembers.aspx?StaffMemberId=777

Amanda Haponski, Ph.D. 2013-14. *Population genetics/genomics of Great Lakes fishes*. Two publications from post-doc as lead with Stepien as co-author. *Transactions of American Fisheries Society* (2014), *Conservation Genetics* (2016), 2 co-authored book chapters, with Stepien as lead; both 2015. Since 2015: postdoctoral scholar at University of Michigan Museum of Natural History (under Dr. D. O'Foighill)

Yuriy Kvach, Ph.D. 2006. Visiting postdoctoral scholar, Lake Erie Center, Univ. of Toledo, sponsored by Stepien's NSF grant. *Parasites of the invasive round goby in the Great Lakes.* 3 papers with Stepien in *J. Applied Ichthyology*, *J. Great Lakes Research.* (Now: National Academy of Sciences, Odessa, Ukraine). Continuing to collaborate with Stepien; 2016 and 2015 publications with Stepien.

Rex Meade Strange, Ph.D. 2004-2006. Lake Erie Center, University of Toledo. *Lake Erie walleye genetics,* funded by Stepien's Sea Grant funds. 7 Talk research presentations and poster (with Stepien): Lake Erie Walleye Task Group annual meeting (2005, 2006), Ohio Division of Wildlife annual meeting (2005, 2006) IAGLR (2005, 2006), ASIH (2005), SSE (2006). Two papers with Stepien, *Fishery Bulletin* and *Canadian Journal of Fisheries and Aquatic Sciences.* (Now: Assoc. Prof. of Developmental Biology, Southern Indiana University)

Meriel Brooks, Ph.D. 1992-3. Case Western Reserve University. *Blennioid phylogeny*. Publication with Stepien, talk presentation at ASIH with Stepien. (Now: Professor, Green Mountain Coll., VT)

M.S. Thesis Students with Stepien as Lead Advisor, Graduated

Timothy Sullivan, M.S. 2013. The University of Toledo. Thesis: *Temporal and spatial genetic patterns among yellow perch spawning populations.* Talk research presentations at American Fisheries Society annual conference, Seattle (selected to compete for best paper award), Intern. Assoc. for Great Lakes Research annual conference, Sigma Xi, posters at Ohio Fish and Wildlife Assoc. NSF Gk-12 fellow. Two papers as lead author with Stepien: *Journal of Great Lakes Research* (2014) & *Transactions of the American Fisheries Society* (2015). Three others as co-author, including one in 2017. Ph.D. 2017 at University of Louisiana, Lafayette, postdoctoral fellow (2017-18) at University of Arkansas, Now Research Associate at Gloucester Genomics Institute.

M.S. Thesis Students with Stepien as Lead Advisor, Graduated

Jo Ann Banda, M.S. 2011. The University of Toledo. Thesis: *Temporal and spatial genetic patterns among walleye spawning populations.* Talk research presentations at Intern. Assoc. for Great Lakes Research annual conference, Sigma Xi, Ohio Academy of Sciences, Great Lakes Fishery Commission, posters at Ohio Fish and Wildlife Assoc. NSF Gk-12 Fellow. Publication co-author with Stepien (*Trans. Amer. Fish Soc*. 2012). Now: Works for US Fish and Wildlife Service, Columbus, OH

Amanda Haponski, M.S. 2007. The University of Toledo. Thesis: *Population genetics and divergence patterns of greenside darters.* Talk research presentations at Sigma Xi, Ohio Division of Wildlife Geological Society of America, IAGLR, ASIH. Lead author of 2 papers published (co-authored with Stepien): *Journal of Great Lakes Research* (2008), *Journal of Fish Biology* (2009). Later Completed Ph.D. in Stepien's lab (2013). Now: postdoc at University of Michigan.

Jennifer Skidmore, M.S. 2000. Case Western Reserve University (co-sponsored with Dr. Christopher Cullis). Thesis: *Population genetics and systematics of dreissenid mussels using DNA markers.* National Fish and Wildlife Fellowship under Stepien, 2 talk research presentations with Stepien, 1 publication co-authored with Stepien. Presently: NOAA, Washington D.C.

Alison K. Dillon, M.S. 1998. Case Western Reserve University. *Thesis: Comparative population genetic strategies of two invasive fishes in the Great Lakes.* National Fish and Wildlife Foundation Fellowship 1997-8. 1 research presentation, 5 publications co-authored with Stepien including 2 from thesis (1 as first author). Employed as a research associate at Cleveland Clinic.

Allyson N. Hubers, M.S. 1998. Case Western Reserve University. *Thesis: Variation in the mitochondrial DNA 16S rDNA gene in Dreissena, Mytilopsis, and Corbicula mussels.* 2 research presentations, 3 publications co-authored with Stepien, including one from thesis. Employed by Novagen biotech company, Madison, WI.

Mark D. Chandler, M.S. 1996. Case Western Reserve University. *Thesis: Population variation in DNA sequences of the ruffe in Great Lakes versus European populations.* Awarded NOAA Knauss Congressional Fellowship, Washington, D.C., 1996. Publication co-author with Stepien. Presently: Employed by NOAA, Washington, D.C.

Visiting International Graduate Research Students with Stepien

Shotaro Hirase, M.S., Ph.D. student. Summer-fall 2011. From Marine Field Science Center, Graduate School of Agriculture, Tohoku University, Japan. *Temporal population genetics of the round goby*.

Gokan Kalacyi, M.S. 2010-11. From Molecular Biology and Genetic Lab, Department of Aquaculture, Faculty Of Fisheries, Rize University, Turkey. *Evolutionary relationships of dreissenid mussels*, 2 publications as co-author with Stepien.

Vasily Boldyrev, M.S. fall 2006. From Volgograd, Russia. Sponsored by Stepien's NSF grant. *Morphological systematics of neogobiin gobies.* Publication as co-author with Stepien.

Fabio Lobato, M.S. student. Summer 2008. Brazil. *Molecular systematics of blennioid fishes.* Sponsored by NSF Deep-fin project.

Undergraduate Research Students Sponsored (N=45 total, Most recent ones listed)

Summer Research Experience, Univ. Washington, JISAO, Dakota Hunt, 2018.

Research Experiences for Undergraduates NSF Program, Lead PI. 2015-2016. Led 10-11 each summer.

Hannah Scheppler, B.S. student 2016-2017. *Environmental DNA and detection of invasive fishes In bait shops.* (supported by NSF REU and USEPA grants to Stepien). Oral presentation at 2017 IAGLR conference, working on publication co-authored with Stepien & grad students.

Devon Eddins, B.S. student 2013-2016. *Population genetics of the invasive ruffe fish. (NSF REU).* Paper accepted co-authored with Stepien and graduate students.
Research presentations 2016 at ICAIS, IAGLR, Midwest Grad. Symposium, Ohio Res. Review.
Now: Ph.D. student at Emory University.

Shelby Edwards, B.S. student 2015-16. Field & lab work in Stepien lab. *Fish virus molecular ecology.*

Undergraduate Research Students Sponsored, Continued.

Lola Masenberg, B.S. student 2013-present. *Phylogenetic and biogeographic relationships of the Myxodin Clinidae: An egg laying relict fish group*. Completing publication with Stepien.

Aaron Lucius, B.S. student 2013-14. University of Toledo. *DNA sequencing of fish taxa.*

Bevin Blake, B.S. student from Mt. Union College working in Stepien Lab at University of Toledo. 2012-14. Funded through USDA grant. Walleye study of Cattaraugus Creek (2014 publication as coauthor, with Stepien & her postdoc). Current: M.S. student E. Carolina University.

Susanne Karsiotis, B.S. student, 2011-13. University of Toledo. Funded through Stepien's NSF URM (Undergraduate Research and Mentoring). *Genetic structure and biogeography of the smallmouth bass across North America, based on two genomes*. Publication as lead author, with Stepien as co-author in *Journal of Great Lakes Research*; Another in Press as co-author, with Stepien as lead*, Journal of Fish Biology*.

Hillary Dean, B.S. student, 2010-12. University of Toledo. Funded through Stepien's NSF URM (Undergraduate Research and Mentoring). *Fifteen years of genetic profiling of walleye in Cattaraugus Creek, a Lake Erie tributary.* Presented at Sigma Xi conference and Ohio Fish and Wildlife Management conference (posters). Ohio Environmental Scholarship Awardee (2011-12). Ohio Chapter American Fisheries Society Partnership Award for Undergraduate Student Research (2012). Co-authored publication with Stepien and her postdoc (*Transactions American Fisheries Society*). Current: Graduate student, Delaware State University.

High School Teachers

NSF Gk-12 Program Lead Principal Investigator, $3 million, 8 teachers, 2008-2015. *Graduate fellows in high school STEM education: An environmental science learning community at the land-lake ecosystem interface*. Teachers: Paulette Cole and Timothy Bollin (Toledo Early College High School); Jahnine Blosser (Scott High School); Michelle Bogue (Sylvania Northview High School); David Bourland (Bowsher High School); Caine Kolinski (Clay High School); Kathleen Singler and Jeremy Nixon (Ottawa Hills High School), Wendy Wilson (Start High school); Ann Hajibrahim (Central Catholic High School); Todd Aseltyne (St. John's High School). Graduate students partnered with teachers to mentor science fair projects, oversee special projects, and mentor students to enter STEM careers.

Timothy Bollin, M.S. Toledo Early College High School, Toledo, Ohio. *Genetic studies of darters in northwest Ohio*. NSF-sponsored Research Experiences for Teachers (RET) award to implement molecular population genetics study in urban minority high school classrooms. Presentations: Talk research at Ohio Academy of Sciences, International Association for Great Lakes Research. Publication with Stepien and her graduate student (*Journal of Fish Biology).*

High School Research Students (N=12; most recent listed.)

Ms. Susanne Karsiotis, Clay High School, *Salinity tolerance of the exotic round goby: Experimental implications for seawater ballast exchange.* 1st place award at Northwest Regional Science Fair, $4,000 scholarship, Ohio State competition award. 1st place best environmental poster award at Lake Erie Center NSF Gk-12 competition. Project is published (*Journal of Great Lakes Research*). Became: University of Toledo undergraduate researcher in Stepien lab.

Ph.D. Dissertation Committees

Mr. Qi (Bruce) Ko (Dr. Douglas Leaman, Biology, Univ. of Toledo) 2014-2016 (graduated).

Ms. Breanna Caton (Dr. Von Sigler, University of Toledo) 2014-present.

Dr. Julianne Horvath-Roth, Department of Genetics (Dr. Evan Eichler, N.I.H. Human Genome Project), Case Western Reserve University, Ph.D.

Dr. Debra Matthews, Department of Genetics, Case Western Reserve University and John Hopkins University, (Dr. Aravinda Chakravarti's lab, N.I.H. Human Genome Project).

Dr. Kimberly Donaldson, University of South Florida, Ph.D.

Dr. Christopher Burridge, University of Tasmania, Australia, Ph.D.

M.S. Thesis Committees

Mr. Wade Weaver, Biology Department, Univ. Toledo (Dr. Douglas Leaman) 2016-present.
Mr. Adam Russell, DES Dept., Univ. Toledo (Dr. Daryl Moorhead) 2012-2014 (graduated).
Mr. Adam Pore, Biology Department, Univ. Toledo (Dr. Douglas Leaman) 2011-2012 (graduated).
Ms. Kristen DeVanna, DES Department, Univ. Toledo. (Dr. Christine Mayer).
Mr. Brian Elkington, DES Department, Univ. Toledo. (Dr. Christine Mayer).

UNIVERSITY TEACHING EXPERIENCE

Courses Well-Qualified to Teach (beginning and advanced undergraduate and graduate levels)

Evolutionary Biology	Population Genetics	Genetics and Genomics
Population Biology	Marine Ecology	Aquatic Ecology
Systematic Biology	Biogeography	Ecology
Ichthyology	Animal Behavior	Environmental Biology
Conservation Biology	Vertebrate Biology	Molecular Systematics
Conservation Genetics	DNA Data Analysis	Evolutionary Ecology

Courses Taught at the University of Toledo (2004-2018)

Environmental DNA: Metagenomics and Bioinformatic Applications for Aquatic Ecology, Graduate seminar (unpaid), spring 2018
Advances in Population Genetics, fall 2015
Advances in Biogeography (graduate and advanced undergraduate), fall 2007
Great Lakes Fish Ecology, spring 2015 (with Dr. Patrick Kocovsky)
Invasion Ecology (graduate and advanced undergraduate students), fall 2014, 2005
Conservation Genomics (graduate students), spring 2012
Advances in Population Genetics and Genomics (graduate), spring 2014, fall 2011
Conservation Genetics (graduate and advanced undergraduate), 2013, 2010, 2008
Evolutionary and Ecological Adaptations in Aquatic Ecosystems, summer 2011

Courses Taught at the University of Toledo, Continued (2004-2018)

Lake Erie Fisheries Management (graduate and advanced undergraduate students), fall 2012 (with Dr. Patrick Kocovsky, USGS, and Dr. Christine Mayer)
Landscape Genetics (graduate and advanced undergraduate levels), spring 2011
Phylogenetic Systematics Methods, fall 2010
Molecular Evolutionary Ecology (graduate and advanced undergraduate), fall 2006
How to Write and Publish a Scientific Paper (graduate), spring 2007
Gk-12 program Environmental Science Education, 2008-2013
Fisheries genetics seminar, 2016, 2015, 2010, 2009
Research methods to early college high school students, 2008-2010
Speciation: Concepts and controversy (graduate), spring 2005

Courses Taught at Cleveland State University

Trends in Ecology and Evolution (graduate seminar course)
Evolution, Creationism, and “Intelligent" Design (graduate seminar course)
Presentation Methods in Environmental Science, Technology and Policy for Civil Engineering, Law, Urban Studies, and Biology graduate students
Marine Ecology (Junior-senior/Graduate full course)

Courses Taught at Case Western Reserve University

Population Biology 310/410 (Junior-senior-graduate)
Marine Ecology 337/437 (Junior-senior-graduate)
Marine Ecology 335/435 Laboratory Fieldtrip to Bahamas (Junior-senior-graduate)
Animal Behavior 338/438 (Junior-senior-graduate)
Graduate Seminar in Ecology and Evolution 531
Undergraduate Seminar in Population Biology 387

Other University Teaching Experience

University of San Diego**,** Visiting Instructor. Sponsored 2 research students (both published with Stepien). General Biology, Environmental Biology, Senior Seminar, Marine Biology
California State University, Lecturer. Ecology, Invertebrate Zoology
University of Southern California, Teaching Assistant. Marine Biology, Ichthyology, Ecology, Marine Ecology, Systematic Biology, Evolutionary Biology, General Biology, Evolutionary Biology for Non-Majors

RESEARCH EXPEDITIONS AND FIELD RESEARCH EXPERIENCE

Research trip, zooplankton & eDNA sampling with Olympic National Marine Sanctuary, 2018.
Research trip to Australia to work on systematics of clinid fishes (with Australian Museum, Sydney; University of Tasmania; Victoria Museum, Melbourne, University of Melbourne). 2013.
Research trip to United Arab Emerites regarding fishery resources and stock structure in the Arabian Gulf, with their EPA. 2013.
Principal investigator of research fish collections in the Black and Caspian Seas. Funded by National Science Foundation (Azerbaijan and Russia) and 2008 (Poland and Russia).
Principal investigator of river and lake fish collections in Ohio and Michigan (with Ohio EPA and several research students), 2003-2017.
Principal investigator of research collection for mussels and fishes and lecturing trip to Ukraine and Black Sea, Sea of Azov, and Crimea region, (led team of 5 scientists and graduate students).
Principal investigator of research collection and lecturing trip to Madeira, Portugal.
Principal investigator of research collecting trip to Japan. The University of Tokyo, Hakkodate University, and Kochi University. Funding by the National Research Council.
Principal investigator of research expedition to Chile to study fish genetics, ecology, and biogeography. Funded by the University of California Research Expeditions Program.
Experienced Scuba Diver and Underwater Researcher - over 600 logged research dives.
Principal investigator of research expedition to Argentina to study fishery genetics and biogeography. Funded by the National Geographic Society.
Research cruises and expeditions with Scripps Aquarium, UCSD to Mexico, fishery genetics.
Principal investigator of research on intertidal and kelp forest fish population genetics in Mexico.
Research Scientist, Central America, Costa Rica, Panama, and Mexico; intertidal fish & invertebrate diversity and ecology. Funded by Charles Lindberg Foundation.
Research Scientist, Midwater trawling cruises to Mexico and California; fish diversity.

SERVICE

NOAA–Current

Joint Institute for Study of the Atmosphere and Ocean (JISAO) Advisory Board, University of Washington 2018-present
-Postdoctoral Selection Committee, 2018
Cooperative Institute for Marine Resources Studies (CIMRS) Science Advisory Council, Oregon State University 2018-present
NOAA OAR Ocean Portfolio Team 2016-present
NOAA OAR Best Paper Award Committee, 2018
NOAA Interagency Genomics Collaboration Group 2017-present
Ocean Acidification Roundtable Group (Multi-agency) 2017-present

NOAA–Current, Continued.

NOAA Collections Management Group (6 members; preservation of NOAA cruise and research samples for the future, museum archives at Smithsonian Institution and other Museum repositiories) 2017-present

NOAA Ocean Explorations Research (OER) Grant Review Panel, 2018

Reviewer for the NOAA 2017 Undergraduate Scholarship applications

Committee on Diversity and Inclusion, PMEL, 2017-present

Volunteer at Science Weekend, Seattle Aquarium, formulated & presented eDNA display for public, 2017, 2016

Volunteer at NOAA Science Camp, 2017, 2018

American Assoc. University Women Tech Trek STEM Science Camp panelist for Middle School girls, 2018

Public Television Special on Invasive Species https://www.wgte.org/tv/programs/detecting-invasive-species-great-lakes

Professional Service–Current

Research Journal Editor

Aquatic Ecosystems Editor, *Ecological Processes*, http://ecologicalprocesses.springeropen.com, 2016-present.

Editorial Board, *Molecular Phylogenetics and Evolution*. 1998-present

Professional Science Service Record

NSF Grant Review Panels: Integrated Organismal Systems, Systematic Biology, Evolutionary Genetics, Biological Oceanography, Sustainability Research Networks, Molecular and Cellular Biology: 1998, 2005, 2010, 2011, 2012, 2015, 2016, 2018

Genetics Editor, *Biological Invasions*. 2009-2017

NOAA CILER Cooperative Institute for Limnology & Ecosystems Research (University of Michigan) Board of Directors. 2011-2016

National Center for Water Quality, Board of Directors, Heidelberg University. 2012-2016

Journal of Great Lakes Research Editor. Special Issues (2012-2016), Lead Genetics Editor (1998-2012), Editor's Awards 2007, 2011

Coordinator, Misc. Workshops for Ohio Division of Wildlife on DNA Markers for Lake Erie Fishes, 30-50 participants, 1993-2016

International Association of Great Lakes Research Conference chair held at University of Toledo

AAAS review panel. Aquatic ecology applications and technology

Board of Directors, International Association for Great Lakes Research (IAGLR) 2004-07 Co-chair Outreach Committee 2005-07. IAGLR Service Award 2007

Mentoring and Advisory Panel, "Assessment of EPA ORD's Recruitment and Retention of Women and Minority Scientists and Engineers in its Postdoctoral Fellows Program". National Council for Science and Environment, Washington D.C.

USGS Global Change National Grant Review Panel, Washington, D.C.

Intel/ISEF International Science and Engineering Grand Awards Fair Judge

Great Lakes Aquatic Ecosystem Research Consortium, Ohio Sea Grant Program meeting

Local committee for International Association for Great Lakes annual meeting. 400 scientists (organized banquet, symposium on invasive round goby, 2 research sessions, luncheon)

University representative for Great Lakes Aquatic Ecosystem Research Consortium at Case Western Reserve University for 5 faculty in Biology, Geology, and Engineering, Coordinated conference.

National Science Board Committee member on Scientific Research at Universities, National Academy of Sciences, Case Western Reserve University

University of Toledo Service Record

Dept. of Laboratory Animal Resources) Search Committee, for new lead Veterinarian, 2016
University of Toledo Water Task Force. Chair of Committee on Land Use-Water Quality 2014-2016
http://www.utoledo.edu/commissions/water-task-force/index.html
Sigma Xi Scientific Society, University of Toledo Chapter, Chapter President 2013-2016
http://www.utoledo.edu/nsm/lec/sigma_xi/ Led Faculty & Student Awards, Implemented Science Cafes. Represented UT at National conference in Kansas City 2015. Coordinated membership, activities, public relations, reporting (2013-2016).
University of Toledo President's Commission on the Ottawa River (on-campus River Restoration) 2004-2016 *http://www.utoledo.edu/commissions/river/index.html*
Department of Environmental Sciences Graduate Student Recruitment committee 2010-2016.
Midwest Graduate Symposium Research Presentation Judge and Sigma Xi Award Presenter 2015, 2016.
Committee on University of Toledo Research Vision
Search Committee and Vision for Dean of College of Education
Research Advisory Board of the University Office of Inter-Institutional Collaboration
Chair of Local Committee for the 2009 International Association for Great Lakes Research Annual Research Conference held at the University of Toledo (noted as one of their best, ever)
National Science Foundation ADVANCE team
Strategic Plan Research and Intellectual Property Work Group
Chair of Faculty Search Committees, Dept. Environmental Sciences, Univ. Toledo, Limnology/ Pelagic Ecology (resulted in two new faculty hires, Dr. Thomas Bridgeman & Dr. Ann Krause)
Faculty Search Committee, DES Department, Watershed Ecology (hire of Dr. Jon Bossenbroek)
Faculty Search Committee, Engineering School (Chemical and Civil Departments), Sustainability position (hire of Dr. Youngwoo Seo)
Sigma Xi Research Conference Judge (several years)

Past University Service Record

Principal Investigator and Organizer for Summer National Science Foundation Research Experience for Undergraduates program.
Co-Principal Investigator and Organizer for Summer Research Experience Program for Secondary School Teachers.
Associate Program Manager for Program of Excellence in Environmental Risk Analysis, reporting to the U.S. Environmental Protection Agency. Helped to supervise program, program reporting, coordination, 10 professors & projects
Advisory Board for Cleveland State Univesity Automated DNA Analysis Joint Facility
Conference Chair, Environmental Risk Assessment Conference & workshops, CSU.
Graduate Affairs Committee, Dept. of Biology, Case Western Reserve University.
Seminar Committee, Department of Biology, Case Western Reserve University.

Education and Mentoring Service Record

Mentoring and shadowing of Westside Montessori 7^{th}-8^{th} grade students, 2004-2016 (2 per year, each spring for one week). Students regularly commented that it was their school's best assignment!
Mentoring High School students from St. John's, Cardinal Strich & Notre Dame High Schools, 2005-2016
High School Teachers in Student Watershed Watch, 2008-2016 (most recently with with T. Bollin, Toledo Early College High School & Michelle Bogue, Sylvania Northview High School)
Mentoring Program for Graduate Students in Science, American Fisheries Society & American Society of Ichthyologists and Herpetologists 1997-present (annually at conferences and beyond)
School Outreach Programs lectures on *Endangered species* and *Marine biology career* for Moreland Hills Elementary School, Orange School District, Cleveland, Ohio
Mentoring Program for High School Science Research, Mentor High School, Ohio
Environmental Priorities Project Committee, Case Western Reserve University.

Education and Mentoring Service Record, Continued.

JASON Science Project Site Teacher Education Workshop Coordinator, CWRU. Research Explorations In Extreme Environments, Coral Reef Project workshop coordinator elementary through high school teachers (85 participated)

NSF Excel Mentoring Program for middle school girls. Sponsored 8th grade students, CWRU

Beachwood High School Science Mentoring Program. Sponsored senior student

CWRU Undergraduate Biology Society invited panelist for discussions on Science and Religion

NSF Excel Science and Engineering summer Program for young women. Middle school plan and conduct laboratory activities; slide presentations on fish behavior

Invited Panel Speaker for Women in Science *Combining Children and Career*; American Society of Ichthyologists and Herpetologists

Mentoring Program for Women in Science, Euclid Senior High School, Ohio

National Science Foundation Young Scholars Program Sponsor for High School Students in Science, Invited Speaker, Ohio Science Fair Project Sponsor