

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

March 2026, U.S. Citizen, Fully Vaccinated and Boostered

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EDUCATION

- **Postdoctoral**
 - **National Research Council Research Associate, NOAA Fisheries, San Diego, CA**
 - Field: Conservation Population Genetics/Genomics, Fisheries, Molecular Ecology
 - *Project: Population Genetic Stock Structure of Continental Slope Fisheries along the NE Pacific (Dover sole & Rockfishes)* (John R. Hunter, sponsor); 3 first author publications
 - Scripps Institution of Oceanography Director's Award for undergrad. & graduate student mentoring
 - Companion field work & guest lecturer in Japan, working on the NW Pacific sister species
 - Scripps Institution of Oceanography Scientific SCUBA Advanced Research Diver
 - **Alfred P. Sloan Foundation Fellow in Molecular Evolution, The University of Texas, Austin, TX**
 - *Molecular Ecology, Evolution, Systematic & Biogeography of Blennioid Fishes using Nuclear DNA Sequences & Phylogenetic Systematics* (David M. Hillis, sponsor); 2 first author publications
 - *Reviewed & was acknowledged in Molecular Systematics foundational book published by Hillis et al.*
 - **National Science Foundation (NSF) Fellow and Principal Investigator, Scripps Institution of Oceanography, University of California, San Diego.** Population Genetics, Molecular Ecology
 - *Project: Conservation Genetics & Evolutionary Relationships of Kelp Forest Fishes* (Richard H. Rosenblatt, sponsor); 4 first author publications; field work throughout NE & SE Pacific
 - Scripps Advanced Open Water Scientific SCUBA Diver Researcher Program, NOAA Certified
- **Ph. D. University of Southern California, Los Angeles, CA, Department of Biological Sciences**
 - Ecology and Evolutionary Biology (Concentrations: Marine Biology, Oceanography)
 - *Dissertation: Genetic versus Environmental Regulation of Color-morphic Patterns in Kelpfishes* (B. Nafpaktitis & R.C. Brusca, advisors); 3 first-authored scientific publications
 - Stoye First Place Best Paper in Ichthyology, American Society of Ichthyologists & Herpetologists
 - First Place Best Student Paper Award, Southern California Academy of Sciences (separate studies)
- **M. S. University of Southern California, Los Angeles, CA, Department of Biological Sciences**
 - Ecology and Evolutionary Biology (Concentrations: Marine Biology, Oceanography)
 - *Thesis: Ecological Distributions and Diets of Nearshore Fish Larvae in the California Current*
 - Calif. NOAA Sea Grant Fellow (B. Nafpaktitis & B.C. Abbott, advisors); First author publication
- **B. S. Bowling Green University, Ohio, cum laude, Biology major; Chemistry, Writing & Physics minors**
 - Summer courses and independent research at the Gulf Coast Research Lab, Ocean Springs, MS
 - *Honors Research Project: Neurobiology of fish bioluminescence* (Leo Demski, advisor); 2 publications
 - 2023 Alumnus award for top Marine Biology Research Career (Cynthia Groat Stong, advisor)

CURRENT POSITIONS & AFFILIATIONS

- **Full Professor (Adjunct), Michigan State University, Center for Global Change and Earth Observations, East Lansing, MI 48823, USA (2025–present), Stepienc@msu.edu**
 - **Scientific Research on Species, Population, & Community-level Genomics & Genetics Diversity, Molecular Ecology, and Evolutionary Systematics/Biogeography:** Effects of climate change, geological events, & anthropogenic stressors (invasive species, exploitation, habitat and connectivity loss, parasites/pathogens, coastline development, etc.) (*research partner: Jiquan Chen, Distinguished Professor*)
 - **AAAS (American Association for the Advancement of Science) Elected Fellow (2016–present)** *For distinguished contributions to the fields of molecular evolutionary ecology and conservation genetics, particularly invasive and native populations, and mentorship of graduate and undergraduate students.* Biology Section.
 - **133 Scientific Publications** in top peer-reviewed Scientific journals & book chapters
 - **297 Scientific Presentations:** Invited international & national scientific conference keynote plenary addresses

- **Full Professor, Michigan State Univ., Center for Global Change & Earth Observations, Continued**
 - *Research*: Molecular ecological, genomic, evolutionary & biogeographic relationships - *Species & Population Trajectories along Time & Space using DNA Sequence Data: Genomic dynamics of geological, geographic, and anthropogenic changes across life stages, food webs & communities*
 - *Approaches*: Environmental DNA, Whole Genome Sequencing, Remote Sensing, Sensing Networks, G.I.S
 - *Taxa*: Marine/Aquatic Fishes & Invertebrates; Invasive Species, Native & Endangered/Threatened Species
 - *Habitats*: Fresh-Oceanic Water Continuums: Streams-Rivers-Lakes-Reservoirs-Estuaries-Bays-Coastal-Nearshore (Planktonic, Benthic)-Offshore-Deep Sea Oceanographic Ranges across Large Lakes & Oceans
 - *Project 1*: *Ecological Effects of the Russia-Ukraine War on Northern Black Sea Species & Communities*
 - Grant Applications in Progress (NSF, USDA, USEPA) with J. Chen (MSU) & Y. Kvach (Ukraine)
 - 12/2025 and 3/2025 publications with Ukraine Academy of Sciences highlighted in journal *Science*
 - Highly cited 3/2025 paper co-authored with 25-year colleague Yuriy Kvach, Odesa, Ukraine
 - *Project 2*: *Invasive Zebra & Quagga Mussel Genomics/Genetics across Time, Space, and Life stages: How invasive populations elude bottlenecks to gain evolutionary “success”* (with Michael Hansen, Denmark)
 - *Project 3*: *Population Genetic/Genomic Changes in marine/aquatic populations from rivers through the seas*
 - *Project 4*: 30 years of *Molecular Systematics of Fishes* & the future (with Thomas Near, Yale University)
- **Carolina Environmental and DNA Analytics, LLC, Castle Hayne, NC, 28429**
(Concurrent with Michigan State University appointment, above)
 - President (4/2025–present); CarolinaEDNA@gmail.com
 - Environmental quality, DNA analytics and consulting, Species identifications from DNA sequencing, Environmental DNA, Community Metabarcoding, Rare & Endangered Species Identifications, Invasive Species tracking
 - *Population genetics/genomics/bioinformatics results and analyses to complement conventional ecological surveys*
 - Ecological analyses for businesses, education, fishery & conservation managers, environmental assessments, Connectivity above & below dams; Habitat and Species/Population Restoration, Species/Population Genetic “Rescue”; Fisheries stock structure assessments; Identifications of invasive species unknowns; Status of endangered/threatened species
 - Latest Project: *Save Sledge Forest*, wetlands conservation & old growth forest along the Cape Fear River, Castle Hayne, NC



CONCURRENT & RECENT AFFILIATIONS & PROFESSIONAL ACTIVITIES

- **National Science Foundation (NSF) Review Panelist**, >3 decades of annual or more panels; 2026, 25, 24 (3)
- **Government Environmental DNA Working Group (GEDWG)**: eDNA methodology and standards, bioinformatics of invasive species, rare and endangered species, community assemblages (2014–pres.)
- **Distinguished University Professor of Ecology**, Lifetime Honor Appointment, University of Toledo (2012–present)
- **Associate Editor, Scientific Journal *Ecological Processes*** (Springer), 2016–present
- **Editorial Board, *Environmental DNA*** (Wiley) 2023–present; preceded by **Associate Editor** 2020–2023
- **Associate Editor, Scientific Journal *Aquatic Invasions*** (REABIC), 2020–present
- **Editorial Board, Scientific Journal *Molecular Phylogenetics & Evolution*** (1998–present)
- **Editorial Board, Scientific Journal *DNA*** 2022–present
- **National Museum of Natural History, Smithsonian Institution**, Research Associate, 2018–2025 Washington, D.C., research appointment (*sponsor: Lynne Parenti*)
- **Mote Marine Laboratory and Aquarium**, Sarasota, FL, Marine Science Education, Research & Outreach; Aquarium guide, Sea Turtle patrol, 2021–2025; 2023 & 2025 service awards (*sponsor: Jeff White*)

EMPLOYMENT HISTORY

C. A. Stepien

- **NOAA Ocean Environment Research Division Leader & Supervisory Oceanographer** (2016–2021)
National Oceanic and Atmospheric Administration; GS-15/10 = ZP-5/4 (40+hrs/wk)
 - **OAR (Oceanic & Atmospheric Research)** at Pacific Marine Environmental Research Lab (PMEL)
 - **Responsibilities: Lead and develop; Innovate, Coordinate, and Disseminate Multidisciplinary Research Programs in Oceanography and Marine Ecology across the World Ocean in support of the Blue Economy**
 - Co-located in Seattle, WA at the NOAA Regional Center & Newport, OR at Hatfield Marine Science Center
 - In charge of ~90 Federal & University Scientists & Contractors including supervision, project coordination, & fiscal project & personnel management; Development of OAR Research Science Trajectory
 - *Lead Mentor & Advisor: Dr. Richard Feely, NOAA Senior Scientist & Head of Ocean Carbon (GS-16)*
 - Ranked 5/5 in Ocean Science Leadership & 5/5 in Scientific Research with top NOAA OAR Reviews
 - *Led 7 Reporting research groups & ~90 federal scientists, university scientists & contractors,*
 - *Oversaw ~\$15 million/year in NOAA funding*
 - *Direct Supervisor of seven ZP-5 (GS-15) NOAA PMEL Research Group Leaders/ Federal Lead Scientists*
 - *Elected Fellow, AAAS, American Association for Advancement of Science, 2017–present*
 - *NOAA Interagency Genomics Collaboration Group (across NOAA OAR, Fisheries, NOS, USGS, USDA, etc.)*
 - *NOAA OAR Ocean Portfolio Team (cross-line offices), leadership setting overall agency goals & priorities*
 - *Opening Plenary Keynote Research Presentation on Stepien’s Genetics & Genomics Metabarcoding & Environmental DNA research in marine & freshwater ecosystems representing NOAA ‘Omics at International Workshop on Environmental Genomics (IWEG), Newfoundland Canada, 2019 (USEPA, USACE, USFWS, USDA, Fisheries & Oceans Canada, International Agencies and Scientists) (Mehrdad Hajibabaei, organizer)*
 - *Science Advisory Board, CIMRS – Cooperative Institute for Marine Resources Studies; Oregon State Univ.*
 - *Oregon State University, Affiliate Professor and Graduate Faculty, Dept. of Fisheries and Wildlife Collaborative research on marine community genetics, genomics & bioinformatics, 2017–2023*
 - *University of Washington Affiliate Full Professor of Biological Oceanography & Graduate Faculty*
 - *Science Advisory Board, CICOES (formerly JISAO); Cooperative Institute for Climate, Ocean and Ecosystem Studies partnering University of Washington, Oregon State University, and University of Alaska*
 - *Scientific Collections Management Policy Group for NOAA Headquarters; developed the first NOAA Natural Collections adopted policy, 2020, modeled after Smithsonian’s policy, 6-member committee*
 - *U.S. National Invasive Species Council eDNA Task Team (Multi-agency, headed at US Dept. of Interior) (NOAA, USGS, USEPA, USFWS, USACE, etc.); 2021 publication on eDNA standardization practices, 2022 white paper (See publication list; https://www.reabic.net/journals/mbi/2021/3/MBI_2021_Morisette_etal.pdf)*
 - *Co-formulated and founded NOAA PMEL Diversity and Inclusion Committee, active throughout*
 - *Represented PMEL at Diversity & Inclusion Summit at NOAA Headquarters*
 - *NOAA Mentoring Program trained mentor*
 - *Advisor of 3 postdoctoral scholars, 3 PhD students, 5 undergraduate researchers/interns*
 - *Headed nominations for a record of 7 successful NOAA Awards for PMEL Research Scientists/Teams*
 - *NOAA Distinguished Career Award Dr. Richard Feely, 2021 (Ocean Acidification/Carbon cycling)*
 - *NOAA Distinguished Career Award Dr. James Overland, 2021 (Arctic Report Card, Ice changes)*
 - *NOAA Distinguished Career Dr. Phyllis Stabeno, 2019 (Alaska/Arctic Marine resources/Fisheries)*
 - *NOAA Distinguished Career Dr. Robert Embley, 2019 (Hydrothermal Vent discoveries)*
 - *NOAA Albritton Science Communicator, Dr. James Overland, 2018 (Arctic Report Card)*
 - *NOAA Administrators Award, Dr. Robert Dziak et al., 2019 (Hydro-acoustic network)*
 - *NOAA Silver Award, Acoustics & Engineering, 2017 (Challenger Deep ocean acoustics)*
 - *Ocean Acidification Roundtable Group (Multi-agency, with NOAA Fisheries in Pacific Northwest)*
 - *Co-author of 3 NOAA white papers on Ocean Acidification Research plans (2020–2029)*
 - *Government Environmental DNA Working Group (GEDWG) (partnering NOAA, USGS, USACE, USFWS, USEPA, & universities, etc.), Conference co-organizer for GEDWG, 2014–present*
 - *Invited Keynote Plenary Presentation on Environmental DNA and Metabarcoding Analysis, 2019*
 - *Headed Conference Publications in 2025 & 2023 in the journal Environmental DNA*

- **NOAA Ocean Env't. Research Division Leader & Supervisory Oceanographer** (2016–21), Continued
 - *NOAA Interagency Genomics Collaboration Group (across NOAA OAR, Fisheries, NOS, USGS, etc.*
 - *Headed PMEL Omics Program funding and projects as lead P.I./Co-PI of research project Washington Sea Grant (with Dr. Julie Keister): Metagenomic fluctuations of zooplankton and ichthyoplankton communities in the Salish Sea: Association with water chemistry (2024 publication, with Stepien as lead author)*
 - *2024 Featured Washington Sea Grant article <https://wsg.washington.edu/the-pulse-of-the-ocean/>*
 - *Headed PMEL Omics Program funding and projects as lead P.I.~\$600–750,000/year*
 - *Founded, obtained and led funding for, coordinated and headed new PMEL Genetics and Genomics Group (G3) (name was later changed to the Ocean Molecular Ecology Group) to interface environmental (e)DNA sampling and genetic/genomic/bioinformatic analyses*
 - *Coordinated and led coPIs, multi-agency investigators, postdocs, graduate & undergraduate students, Cooperative Institutes, partners, collaborators, stakeholders, museums, protected sites, sanctuaries*
 - *Targeted metagenomics and custom multi-gene metabarcoding of environmental DNA, planktonic, and benthic invertebrate and fish communities from deep-sea hydrothermal vents, Alaska, Arctic, NE Pacific U.S. Coastal waters (including Salish Sea and Olympic Coast National Marine Sanctuary): Relation to chemical, physical, and biological parameters*
 - *Partners & Collaborators: Alaska Fisheries Science Center, National Marine Sanctuaries, Washington Department of Environmental Conservation, Washington Ocean Acidification Center*
 - *Research partners inside PMEL: Ocean Acidification/Ocean Carbon – R. Feely, S. Alin Earth-Oceans Interactions – W. Chadwick, T. Baumberger, S. Walker EcoFOCI – P. Stabeno, E. Cokoleit*
 - *Partnered throughout NOAA OAR (Oceanic and Atmospheric Research) laboratories to define develop, and promote NOAA Omics: AOML (Atlantic Oceanic Marine Lab) & GLERL (Great Lakes Environmental Research Lab)*
 - *Led and reported biweekly on 7 Research Groups in Ocean Environment to NOAA leadership/headquarters:*
 - *Ecosystems and Fisheries Oceanography Coordinated Investigations (EcoFOCI)*
 - *Arctic Ecosystems (Arctic Climate Change, producing the Arctic Report Card)*
 - *Earth-Ocean Interactions (EOI: Hydrothermal Vents, Methane Seeps, Mapping & Communities)*
 - *Hydroacoustics (Deep-sea, Challenger Deep, Acoustic Networks, Marine Mammal Acoustics)*
 - *NOAA Center for Tsunami Research (NCTR; World Tsunami Warning System, DART buoys)*
 - *Innovative Technology for Arctic Exploration (Ocean Acidification, Climate Change monitoring)*
 - *Genetics and Genomics Group (G3), (now Ocean Molecular Ecology) founded and headed by Stepien*
 - *Secured & headed & managed ~\$750,000/yr funding from NOAA Omics 2018–2021*
 - *Developed NOAA Omics Metabarcoding, Environmental DNA research with buoy & remote sampling*
 - *Designed PMEL Omics lab, funded all equipment & supplies & led all protocols & Ocean sampling*
 - *27 NOAA PMEL publications by Stepien 2016–2021, at top of NOAA OAR publications rankings*
- **Tenured Full Professor of Ecology, Department of Environmental Sciences, University of Toledo,** Toledo, OH, USA (9/2004–12/2018; leave period overlapped 2016– NOAA Appointment)
 - **Director of the Lake Erie Research Center** (concurrent with above), 9/2004–10/2016
 - **Graduate Faculty Member** (9/2004–12/2019; concurrent with above & below)
 - **Distinguished Full Professor of Ecology** promotion, 1/2012–12/2019, one of just 18 across the University,
 - *Retained Lifetime Distinguished Professor of Ecology Honor, 2012–present*
 - *Mentors: Dr. Frank Calzonetti, VP Research, & Dr. Nagi Naganathan, former University President*
 - **Science Research and Education Leadership:**
 - *Led & Communicated University Research, Education & Outreach informing the Great Lakes community, U.S Congress, Great Lakes States, and Canadian Universities, Managers & Collaborators*
 - *Headed, developed, innovated, coordinated, and disseminated multidisciplinary and multi-institutional research, education, and outreach programs and projects involving dozens to hundreds of collaborators in large teams of professors, researchers, federal & state government managers, students, postdocs, etc.*

EMPLOYMENT HISTORY, Continued

C.A. Stepien

- **Tenured Full Distinguished University Professor of Ecology & Director of the Lake Erie Research Center, University of Toledo, Science Research and Education Leadership**, Continued
 - *Led, worked with, and coordinated 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, NASA) and state agencies, and international partners*
 - *Coordinated and obtained funding for research and education in Environmental Sciences among the Schools of Science (Chemistry, Physics, Biology), Arts, Law, Engineering, Pharmacy, Medicine*
 - *University of Toledo President's Career Award for Excellence in Grantsmanship, 2017*
 - *Lead P.I. for NSF "Land-Lake Environmental Sensor Network" – the World's first on a Large Lake*
 - *Conducted and supervised original research on conservation – genetics, genomics, ecology, and evolutionary patterns of native and invasive aquatic species—as P.I. on extramural grants (~\$11 million)*
 - *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", 2500 high school students, 32 grad students*
 - *Lead P.I. for NSF REU summer research program on "Land-Lake Sensor Network" for minority & non-traditional undergraduate students (300+ applicants for 10 annual positions across multi-disciplinary fields)*
 - *Implemented LEC monthly public lecture series for environmental topics (agency, university speakers)*
 - *Outstanding Organization Award from the Lake Erie Intergovernmental Commission*
 - *Headed the Great Lakes Genetics/Genomics (GLGL) Lab, supervising postdoctoral researchers, Ph.D. and M.S. graduate students, undergraduate research students, and technicians on invasive & native species*
 - *Editorial board of research journal Molecular Phylogenetics and Systematics (Elsevier, 1999–pres. 27 yrs)*
 - *Genetics Editor for Biological Invasions (Springer; 2006–2016, 10 yrs.)*
 - *Genetics Editor for Journal of Great Lakes Research (Elsevier; 1998–2016, 18 yrs.)*
 - *University of Toledo's Outstanding Researcher Award*
 - *Distinguished University Professor Appointment 2012–lifetime honor; University's top honor*
 - *Museum specimen research & archival at Smithsonian Institution, California Academy of Sciences, University of Michigan & Scripps Institution of Oceanography Collections Scientific collections lead across the Baltic Sea, Black and Caspian Seas, and Great Lakes*
 - *Sigma Xi Scientific Research Society Outstanding Researcher Award*
 - *Sigma Xi Scientific Research Society Chapter President; National Conference Representative*
 - *Organized and held main campus Sigma Xi Science cafés to promote public understanding*
 - *Environmental issues with students, researchers, professors, stakeholders, and the public*
 - *Implemented Annual Lake Nature Photo Contest & Display (awards for adults, disabled, children, teens)*
 - *Innovated Annual Lake Nature Art Contest & Displays (awards for adults, disabled, children, teens)*
 - *Formulated and implemented "Friends of the Lake Erie Center" Philanthropy Group, fund-raising, student research & travel awards; Donor and volunteer group (boats, displays, student scholarships)*
 - *NOAA Cooperative Institute Science Board (CIGLR/CILER), headed by University of Michigan for NOAA GLERL (Great Lakes Environmental Research Laboratory), Oceanic & Atmospheric Research (OAR)*
 - *Heidelberg University Water Quality Science Board*
 - *Top research field station in "Interdisciplinary Environmental and Sustainability Education & Research: Institutes and Centers at Research Universities", National Council for Science and the Environment*
- **Program Manager for Environmental Risk Analysis, Cleveland State University**, Cleveland OH
Center for Environmental Science, Technology, and Policy (08/2000–09/2004; 40+hrs/wk)
& Research Associate Professor, Director of the Genetics Laboratory, and Graduate Faculty Academic Appointments: (1) Department of Biological, Geological & Environmental Sciences and (2) Department of Chemistry (*supervisor & mentor: Dr. Mark Tumeo, Vice President for Research*)
Science Research, Project Management & Teaching
 - *Grant writing, planning, coordination, and conservation management (including multi-disciplinary and multi-institutional), partnering with management agencies— \$1.5 million awarded in grants as P.I.*

- **Program Manager for Environmental Risk Analysis & Associate Research Professor, Cleveland State University, Continued**
 - *Managed productive \$2 million new multi-disciplinary USEPA Environmental Risk Analysis Program*
 - *Coordinated 10–12 faculty across Environmental Engineering, Economics, Biology, Chemistry, Environmental Sciences, Business, Law, Public Health*
 - *Implemented & coordinated programs, seminars, symposia, students, output, faculty research areas*
 - *Reported quarterly to the US Environmental Protection Agency*
 - *Environmental & conservation research: In charge of research conferences, seminars, symposia*
 - *Ran environmental ecological genetics laboratory, focused on invasive species, mentoring and supporting research technicians, graduate 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 on Cuyahoga River*
 - *Scientific advisory board for DNA Analysis Facility; Genomics, Bioinformatics, Proteomics*
 - *Editorial board of research journal Molecular Phylogenetics and Systematics, 1999–present*
 - *Genetics Editor for Journal of Great Lakes Research*
 - *Graduate and undergraduate teaching: Evolution, Genetics, Environmental Sciences*
 - *Conducted Annual Research Symposium on Genetics/Genomics Applications for Great Lakes' Fishery and Conservation Managers (Ohio, Michigan, Wisconsin, New York, Pennsylvania, Ontario Canada)*
 - *Taught required seminar course on “How to give Research Oral and Poster Presentations and Environmental Career Opportunities” for all Environmental Master’s Degree Students (Engineering, Chemistry, Biology, Environmental Sciences, Public Health)*

- **Case Western Reserve University, Department of Biology, Cleveland, Ohio, USA**
 - **George B. Mayer Chair in Urban and Environmental Studies**, *Rotating 3-year asst. prof. research chair (9/1992–6/1995); established research & teaching in Great Lakes conservation*
 - **Assistant Professor, Department of Biology & Graduate Faculty** (6/1995–8/2000)
 - *(Mentor in Great Lakes Research; Dr. Gerald Matisoff, now Emeritus Professor and Chair Emeritus)*
 - *Established productive Genetics/Genomics laboratory collaborating with Great Lakes' Fishery managers*
 - *Key Collaborators: Ohio Division of Wildlife, Michigan & Wisconsin DNRs, Pennsylvania Fish & Boat Commission, New York Dept. of Environmental Conservation, Ontario Ministry of Natural Resources, National Invasive Species Task Force, USGS, NOAA GLERL, NASA, International Joint Commission*
 - *Techniques: Mitochondrial and nuclear DNA sequencing, Tandem Repeated Sequences & DNA Microsatellites, Phylogenetic Analyses, Population Genetics, Landscape Genetics, Biogeography*
 - *Stepien ranked top 10% in extramural funding, and #2 in the Department of Biology*
 - *Funded by NOAA, OH Sea Grant, National Fish & Wildlife Found., Lake Erie Protection Fund*
 - *Research focus 1: Population Genetics and Genomics, in relation to stock structure of native exploited fisheries: walleye, yellow perch, smallmouth bass*
 - *Research focus 2: Genetic variation, tracing, and adaptations of Invasive Species: origins, pathways, and spread patterns invasions of zebra and quagga mussels, ruffe fish, and the round and tubenose gobies*
 - *Research focus 3: Evolutionary, phylogenetic systematic, and biogeographic patterns and relationships of the Percidae (walleye, perch, ruffe, & relatives), the Dreissenidae (zebra & quagga mussels & relatives) & the Neogobiini (round and tubenose gobies & relatives), across Eurasia and North America*
 - *Edited & published Molecular Systematics of Fishes book, co-edited with Thomas Kocher (Academic Press), which was reviewed and rated very highly by Nature & Copeia (still selling online)*
 - *There is now a 30-year capstone paper being drafted by Stepien with colleague Thomas Near (Yale U.)*
 - *We also are planning a symposium for 2027 and new book (Taylor & Francis publishers) on the 30-year anniversary in 2027, Molecular Systematics of Fishes II: Perspectives and Advances*

- **Case Western Reserve Assistant University Professorship**, Continued
 - *Published 12 peer-reviewed scientific research papers and book chapters*
 - *Brought CWRU into the Great Lakes Aquatic Ecosystem Research Consortium and served as the institutional Great Lakes representative for faculty from Engineering, Geology, and Biology*
 - *Graduated Ph.D. students and M.S. students – all funded by Stepien’s grants, all published (with Stepien), all gave professional presentations, and all are employed in Biology and Ecology*
 - *Sponsored and mentored 17 undergraduate research projects with publications, awards, and presentations*
 - *Taught graduate and undergraduate courses and seminars in Environmental Sciences, Biotechnology, Ecology, Evolution, Marine Ecology, Population Biology, Animal Behavior, and Biogeography*
 - *Formulated and taught Marine Ecology Fieldtrip in the Bahamas and accompanying semester course*
 - *Organized environmental/ evolutionary / ecological symposia, seminars, and conferences*
 - *Collaborated with CWRU Medical School researchers on Genomic approaches & techniques*
 - *Served on NSF, USGS, & NOAA Sea Grant review team panels and as scientific program reviewer*
 - *Became Associate Editor, in charge of Genetics, for Journal of Great Lakes Research*
 - *Museum specimen archival (Smithsonian, Cleveland Museum of Natural History, Univ. Michigan)*
 - *Environmental Achievement award from Case for research, teaching, and mentorship (2000)*
- **National Research Council Research Associate, NOAA Fisheries**, Southwest Fisheries Science Center, National Oceanic and Atmospheric Administration, La Jolla, California (01/1991–09/1992) (*Sponsor: John R. Hunter*). *Comparative population genetics of commercial continental slope fisheries using DNA sequencing analyses. Collection trips & presentations in Japan, N. Pacific cruise, 3 first-authored publications*
- **Sloan Foundation Postdoctoral Research Fellow in Molecular Evolutionary Biology, The University of Texas at Austin** (1/1988–12/1990) (*Sponsor: David M. Hillis*) *Molecular evolution and systematic relationships of blennioid fishes from nuclear DNA sequences. 2 first-authored publications*
- **National Science Foundation Postdoctoral Researcher and Principal Investigator, Scripps Institution of Oceanography**, University of California, San Diego (8/1986–12/1988) (*Sponsor: Richard H. Rosenblatt*) *Population genetics, biogeography, and systematic relationships of clinid fishes from molecular and morphological data. Received Scripps Director Award for Student Mentorship and Advisement. 3 first-authored publications. Scripps Advanced Open Water Scientific Research 100’ SCUBA Diver Certification*
- **Visiting Instructor of Biology and Marine Studies, University of San Diego** (1/1986–8/1988) (*chair: Dr. Cole Manes*) *Teaching (Marine Biology, General Biology, Senior Research Seminar), research sponsor of undergraduates (2 undergraduates published with Stepien for research projects)*
- **Research Associate, Hubbs Marine Research Center**, San Diego (9/1984–9/1986) *Fish ecology, color change experiments with kelpfishes, SCUBA diving research, student research mentor (Donald Kent, sponsor)*
- **Lecturer, California State University, Dominguez Hills**, Department of Biology, Los Angeles (9/1983–6/1984) *Taught Invertebrate Zoology and Marine Biology to advanced undergraduate majors; 2 years*
- **Graduate Research Assistant, NOAA Sea Grant, University of Southern California**, Los Angeles, CA (08/1981–08/1983) *Populations, systematics, and ecology of nearshore fish larvae from CalCOFI. Resident field SCUBA scientific diving research at Wrigley Marine Science Center on Santa Catalina Island; Grants & best paper awards from American Society of Ichthyologists & Herpetologists, American Museum of Natural History, Southern California Academy of Sciences, Western Society of Naturalists, NOAA Sea Grant*
- **Laboratory Instructor & Teaching Assistant, University of Southern California** (08/1979–12/1984). *General Biology, Physiology, Marine Biology, Ichthyology, Invertebrate Zoology. ASIH First Place Stoye Best Paper Award in Ichthyology; Southern California Academy of Sciences First Place Best Presentation Award; Research Cruise Scientist in Ichthyology, Midwater Trawling on R/V Velero III (NSF Sponsored); Research Cruise Scientist with CalCOFI Cruises in California Bight, fish trawling sampling & water quality; Field research on intertidal fishes in Panama, Costa Rica & Mexico (w/ R.C. Brusca), Charles Lindberg Found. Fund.*

BIOINFORMATICS ADVANCES, TRAINING & UPDATING

C.A. Stepien

- **Python Programming**, Smithsonian Carpentries, 2025
- **Metabarcoding R-Studio Programming Analysis Course**, Smithsonian, 2025
- **Metabarcoding Workshops**, Smithsonian National Museum of Natural History, 2024–2025
- **Eukaryotic Metagenomics and Metabarcoding course**, Dr. Florian Leese, University of Duisburg, 2024
- **Smithsonian GitHub and Scientific Computing Best Practices Workshop**, 2024
- **Genome Skimming: Techniques & Analyses**, Smithsonian National Museum of Natural History, 2024
- **Qiime2 Interactive Training** for Illumina High Throughput sequencing, 2024
- **Environmental DNA Technical Exchange Workshop**, Computer Workshop for eDNA Occupancy R package and metabarcoding packages. USGS. St. Petersburg, FL, 2019

SCIENTIFIC RESEARCH

- **Research Foci:**
 - **Evolutionary Systematics & Biogeography; Conservation Genetics, Genomics, & Bioinformatics** to understand Ecological Patterns and Adaptations of Invasive and Native Marine, Estuarine, and Freshwater Fishes and their Associated Invertebrate and Parasite/Pathogen Communities
 - **DNA Biotechnology** applied to evaluate Evolutionary, Environmental, and Biological Diversity in concert with Environmental and Anthropogenic Changes detected via Remote Sensing, Drones, AUVs, Hydro-acoustics, Visual Imaging, *in situ* analyses, Artificial Intelligence
- **Question/Hypothesis Areas:**
 - Testing ecological, evolutionary, biogeographic, distributional, and adaptation hypotheses of invasions
 - Understanding species, population, and community-level responses to anthropogenic stressors (invasive species, climate change, warming, acidification, hypoxia, fisheries exploitation, aquaculture waste, pollutants, plastics, nutrients, carbon fluxes, and habitat alterations, loss & connectivity)
 - Evaluating Population, Species, and Community Relationship Dynamics across life stages, time, and space
- **Ongoing Research Projects and Interests:**
 - (1) Metagenomic dynamics of invasive, rare, endangered, and/or exploited fishes and invertebrates, and their community diversity patterns across marine, coastal and fresh waters
 - (2) Biotechnology to sample and analyze environmental and organismal DNA using targeted multi-gene organellar and nuclear DNA markers with custom metabarcoding & whole genome sequencing
 - (3) Analysis of ancient DNA preserved in sediments, cores and museum samples; contemporary DNA on biofilms and plastics, and transported via aerosols, vessels, structures, floating objects, animals, plants
 - (4) Developing, testing, and applying targeted metabarcode assays to identify the taxa in ethanol preserved samples (e.g., Environmental DNA dissolved in the preservative), including mixed samples of fishes, fish eggs, larvae, multiple taxa, their parasites, pathogens, symbionts, and/or diet contents
 - (5) Evolutionary relationships and coevolution between pathogens/parasites, and their host responses in marine & aquatic ecosystems
 - (6) Conserving, Testing, and Preserving/Archiving Ukrainian and other Ponto-Caspian fish and macroinvertebrate samples to evaluate native and invasive population genetics, systematics, genetic diversity, population connectivity, and their diets, parasites, and pathogens (in concert with Dr. Yuriy Kvach, long-time Ukrainian Research Science collaborator, Ukraine Academy of Sciences)
- **Techniques:** *High-throughput sequencing, custom targeted metabarcoding, environmental DNA, whole mitochondrial & nuclear genome sequencing, genome skimming, qPCR, ddPCR, custom Bioinformatics*
- **Partnerships and sampling with Marine, Coastal and Freshwater Sanctuaries, Protected Areas, Parks, and Reserves, along with federal, state, provincial, and international agencies and research labs; Present:** *International collaborative effort to preserve Ukraine marine and freshwater samples and collaborations (with long-time Stepien collaborator Yuriy Kvach, Ukraine Academy of Sciences; two 2025 publications)*
- **Collaborations and applications across U.S. and international fisheries and environmental agencies, managers, and research consortia to institute standardized environmental DNA and genomic/bioinformatic methods for sampling, analyses, interpretation, and long-term museum archival**
- **Interfacing and collaborations with the U.S. Aquatic Nuisance Species Task Force, National Invasive Species Council, Government eDNA Working Group (GEDWG), American Fisheries Society Genetics Section**

PUBLICATION RECORD

C.A. Stepien

H-Index=50, i10-Index=110 citations >7,100

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

Research Gate: (top 96%)

https://www.researchgate.net/profile/Carol_Stepienhttps://www.researchgate.net/profile/Carol_Stepien

Academia: <https://carolstepien.academia.edu>

Orcid: <https://orcid.org/0000-0002-5544-4333>

Scopus: 170731-0169

[Loop profile: 1804904](#)

SCIENTIFIC PUBLICATIONS

Manuscripts Currently in Review, Revision, or Draft for Peer-Reviewed Scientific Journals

134. Araujo G.W., J.L.H. Gasparini, L.A. Rocha, H.T. Pinheiro, A. Vilasboa, C.A. Stepien, S.F. Floeter, F.D. Dario. Clarifying the *Labrisomus* conundrum: Deep divergence, cryptic lineages, and a genetic melting pot in the Atlantic Ocean (Teleostei, Labrisomidae). In review. (*CAS long-term work on blennioid fishes*)
135. Miettinen A., E.S. Jensen, J. Gottenborg, S. Tanderup, A.N. Buur Tengstedt, C.A. Stepien, M.M. Hansen. Bottlenecked but booming: Strong inbreeding in a highly invasive freshwater mussel (*Dreissena polymorpha*). In review. (*CAS long-time work on dreissenid mussel genomics/genetics*)
136. Stepien, C.A. & T. Near. Thirty years of Molecular Systematics of Fishes: Projections for the future. In Preparation. (see Stepien's 1997 book, this is a 30-year anniversary progress overview, with future projections), planned for 2026–2027, with companion research symposium being organized for 2027.
137. Stepien, C.A.***, N.T. Marshall, J. Keister, N. Bednarsek. Understanding seasonal and annual distribution patterns of planktonic mollusks and their larvae across the Salish Sea with multi-marker metabarcoding. In manuscript. (*CAS work on Salish Sea metabarcoding species diversity; accompanying 2026 GEDWG conference presentation*)
138. Stepien, C.A. **, N.T. Marshall, M.E. Neilson, M. Busby. Discerning seasonal and habitat patterns of ichthyoplankton species diversity and distributions across the Salish Sea, using multiple marker metabarcoding analyses. In manuscript. (*CAS work on Salish Sea metabarcoding species diversity*)
139. Stepien, C.A. **, M. E. Neilson. Growing applications of metabarcoding, genome skimming, and other genomic approaches in aquatic and marine invasive species research and management. In prep.
140. Stepien, C.A.**, N.T. Marshall, M.E. Neilson, N. Bednarsek, R. Feely et al. Invertebrate community diversity across seasons and years in the Salish Sea: invasive and rare species with multi-locus metabarcoding analyses. In prep. (*CAS work on Salish Sea metabarcoding species diversity*)

Publications (In Reverse Order)

* = graduate students, undergrad students, technicians, post-docs directed/supervised by Stepien

**= Stepien corresponding author & lead P.I.

133. Lepekha A, O. Koshelv O, C.A. Stepien, Y. Kvach. **2025**. Accumulation of trace metals in tissues of the Oriental river prawn *Macrobrachium nipponense* (Arthropoda: Crustacea: Decapoda: Palaemonidae) from polluted waters in southwestern Ukraine. *Estuarine Management and Technologies*. 2:185–204. <https://emt.pensoft.net/article/176866/> <https://doi.org/10.3897/emt.2.176866>
(Part of Stepien's ongoing work with Ukraine & the effects of the Russia-Ukraine War & nonindigenous species, with long-term collaborator Yuriy Kvach from the Ukraine National Academy of Sciences. Stepien formulated the hypotheses, revised & rewrote the entire paper; this species is invasive in the US)
132. Stepien, C.A, Lance, R. **2025**. Commentary: 7th Annual eDNA Technical Exchange Workshop. *Environmental DNA*. 7(9), e70163 DOI: 10.1002/edn3.70163 <https://onlinelibrary.wiley.com/doi/10.1002/edn3.70163> (*CAS work with GEDWG environmental DNA*)
131. Kvach Y. and Stepien, C.A.**, Minicheva G.G., Tkachenko P. **2025**. (Stepien is co-first-author). Biodiversity effects of the Ukraine-Russia War and the Kakhovka Dam Destruction: Ecological consequences and predictions for marine, estuarine, and freshwater biota in the northern Black Sea. *Ecological Processes*. 2025:14(22) <https://doi.org/10.1186/s13717-025-00577-1>
Blog at: https://communities.springernature.com/posts/ecological-damage-of-the-war-in-ukraine?channel_id=behind-the-paper
Featured in *Science* 2025 at: <https://www.science.org/content/article/wartime-destruction-ukraine-dam-has-set-time-bomb>

* = grad students, undergrad students, techs, post-docs directed/supervised by Stepien

**= Stepien corresponding author & lead P.I.

130. Thieltges D.W., D.B. Conn, R.N. Cuthbert, A.M. Dunn, E.R. Jolma, M. Camille Hopkins, V. Sarabeev, S. Smolders, C.A. Stepien, K.M. Wegner, P. Kočovský. **2025**. Integrating climate change, biological invasions, and infectious wildlife diseases. *Frontiers in Ecology & the Environment*. e2849. <https://doi.org/10.1002/fee.2849> (collaborative research overview on invasion ecology stemming from invasive species symposium)
129. Stepien, C.A.***, H. K. Schultz, S. M. McAllister*, E. Norton*, J. E. Keister. **2024**. Evaluating mtDNA metabarcoding markers to identify zooplankton and ichthyoplankton in the Salish Sea: Resolution in comparison to morphology and detection of rare, threatened, or invasive species. *DNA*. 2024: 4: 1–33. <https://doi.org/10.3390/dna4010001> <https://www.mdpi.com/2673-8856/4/1/1> (*McAllister-postdoc., *Norton-technician in CAS lab, Schultz=Keister grad student). ** one of Stepien's papers for this large Salish Sea effort she led, delayed by the pandemic). **COVER FEATURE**
128. Marshall, N.T.*, K.E. Klymus*, C.A. Stepien. **2024**. Species richness and distribution of Sphaeriidae surveyed with environmental DNA metabarcoding. *Freshwater Mollusk Biology and Conservation*. 27(1): 16–26. <https://doi.org/10.31931/fmbc-d-23-000003> (Marshall is Stepien's graduated PhD student, Klymus was her postdoc, Stepien's EPA grant)
127. Harris S.C., G. Palmer, C.A. Stepien, E.M. Hallerman. **2024**. Population genetic differentiation of Walleye (*Sander vitreus*) across the Eastern Highlands of the United States. Special Issue: Molecular Ecology and Genetic Diversity of Fish. *Fishes*. 2024 9(1):15; <https://doi.org/10.3390/fishes9010015> (Stepien's long-term percid fish work)
126. Stepien, C.A.***, R.F. Lance, K.E. Klymus, M.E. Hunter. **2023**. **Commentary**: 6th Annual eDNA Technical Exchange Workshop. *Environmental DNA*. DOI: 10.1002/edn3.466, <https://onlinelibrary.wiley.com/doi/epdf/10.1002/edn3.466> (Stepien represented the journal at the conference; Stepien's long-time work on eDNA with GEDWG).
125. Zarei, F., H.R. Esmaeili, C.A. Stepien, M. Kovačić, K. Abbasi. **2023**. Otoliths of Caspian gobies (Teleostei: Gobiidae): A study of morphological diversity and phylogenetic inference. *PLoS One*. 18(5):e0285857 DOI: [10.1371/journal.pone.0285857](https://doi.org/10.1371/journal.pone.0285857) (part of Stepien's Ponto-Caspian aquatic fish conservation efforts; some of these taxa &/or their relatives have invaded North America)
124. Dobrzycka-Krahel, A., C.A. Stepien**, Z. Nuc. **2023**. Neocosmopolitan distributions of invertebrate aquatic invasive species due to euryhaline geographic history and human-mediated dispersal: Ponto-Caspian versus other geographic origins. *Ecological Processes*. 12:2. <https://doi.org/10.1186/s13717-022-00412-x> (Stepien's Ponto-Caspian conservation work, invasive species that have invaded the US, Stepien extensively revised/rewrote this paper).
123. Stepien, C.A.***, Theroux, S., Weisberg, S. **2022**. **Commentary**: The Second National Workshop on Marine eDNA: A workshop to accelerate the incorporation of eDNA science into environmental management applications. *Environmental DNA*. 6(1), E379. (Stepien wrote and covered this conference for the journal as associate editor). <https://onlinelibrary.wiley.com/doi/10.1002/edn3.379c> (part of Stepien's long-time eDNA work with GEDWG)
122. Zarei, F., Esmaeili, H.R., Abbasi, K., Kovacic, M., Schiewen, U.K., Stepien, C.A. **2022**. Gobies (Teleostei: Gobiidae) of the oldest and deepest Caspian Sea sub-basin: an evidence-based annotated checklist and a key for species identification. *ZooTaxa*. DOI: 10.11646/ZOOTAXA.5190.2. https://mapress.com/zt/article/view/zootaxa_5190.2.1 (collaboration is part of Stepien's efforts to conserve and preserve Ponto-Caspian species diversity and museum voucher samples)
121. Tajbakhsh, F.*, H. Rajabi-Maham, A. Abdoli, C.A. Stepien, B. H. Kiabi. **2022**. DNA sequence support for re-classification of the endemic south Caspian Sea deepwater goby as *Neogobius bathybius* (from *Ponticola*; Perciformes: Gobiidae) and recent population expansion of a continuous population. *Ichthyology and Herpetology* (formerly *Copeia*) 110(1):13–21. <https://doi.org/10.1643/i2020015>; <https://bioone.org/journals/ichthyology-and-herpetology/volume-110/issue-1/i2020015/DNA-Sequence-Support-for-Reclassification-of-the-Endemic-Southern-Caspian/10.1643/i2020015.short> (PMEL#5033). (Fatemeh Tajbakhsh is a Stepien mentee, who now has her Ph.D.; Stepien provided phylogenetic analysis on gobies, interpretation, and English help; congeners of this species have invaded North America).
120. Niner, M.* & C.A. Stepien.***, B. Gorgoglione, D.W. Leaman. 2021. Genomic and immunogenic changes of *Piscine novirhabdovirus* (Viral Hemorrhagic Septicemia Virus) over its evolutionary history in the Laurentian Great Lakes *PLOS One*. <https://doi.org/10.1371/journal.pone.0232923>
Stepien is co-first author (lead PI)(Stepien/Leaman NSF grant; Niner=Stepien PhD student, CAS rewrote the paper; PMEL#4994)
119. Morisette, J... et al... C.A. Stepien, et al. (18 authors; U.S. National Invasive Species Council eDNA Task team). **2021**. Strategic considerations for invasive species managers in the utilization of environmental DNA (eDNA): steps for incorporating this powerful surveillance tool. *Management of Biological Invasions*. 12, Issue 3: 747–775. https://www.reabic.net/journals/mbi/2021/3/MBI_2021_Morisette_etal.pdf

* = grad students, undergrad students, techs, post-docs directed/supervised by Stepien

**= Stepien corresponding author & lead P.I.

118. Marshall, N.T.* & C.A. Stepien** (co-first authors) 2021. Genetic trajectories of zebra and quagga mussel invasions across three decades: Lake Erie versus Hudson River populations. *Aquatic Invasions*. 16(1):147–166. <https://doi.org/10.3391/ai.2021.16.1.10> <https://www.reabic.net/aquaticinvasions/2021/issue1.aspx> (*CAS PhD stu., USEPA; PMEL#4922)
117. Snyder, M.R.* & C.A. Stepien**. 2020. Increasing confidence for discerning species and population compositions from metabarcoding assays of environmental samples: case studies of fishes in the Laurentian Great Lakes and Wabash River. *Metabarcoding and Metagenomics*. 4:47–63. (Snyder=Stepien grad student advisee) <https://doi.org/10.3897/mbmg.4.53455> (PMEL#4927) (Funded by Stepien's EPA grant, *=Stepien's PhD student)
116. Stepien, C.A.** & M.D. Niner*. 2020. Evolutionary trajectory of fish *Piscine novirhabdovirus* (=Viral Hemorrhagic Septicemia Virus) across its Laurentian Great Lakes history: Spatial and temporal diversification. *Ecology and Evolution*. 10(18):9740–9775: <https://doi.org/10.1002/ece3.6611> (NSF; PMEL#4927)
115. Marshall, N.T.* & C.A. Stepien**. 2020. Macroinvertebrate community diversity and habitat quality relationships along a large river from targeted eDNA metabarcoding assays. *Environmental DNA*. 2(4): 572–586. (USEPA grant awarded to Stepien; *=CAS PhD stu.; PMEL#4967) <https://onlinelibrary.wiley.com/doi/full/10.1002/edn3.90>
114. Shao, C., J. Chen, C.A. Stepien, H. Chu, Z. Ouyang. 2020. Intra- and inter-annual dynamics of evaporation over western Lake Erie. *Earth and Space Science*. 7:11. <https://doi.org/10.1029/2020EA001091> (NSF; PMEL#5036)
113. Zhao, H., K. Silliman, M. Lewis, S. Johnson, G. Kratina, S.J. Rider, C.A. Stepien, E.M. Hallerman, B. Beck, A. Fuller, E. Peatman. 2020. SNP analyses highlight a unique, imperiled southern walleye (*Sander vitreus*) in the Mobile River Basin. *Canadian Journal of Fisheries and Aquatic Sciences*. 77:1366–1378. <https://doi.org/10.1139/cjfas-2019-0351> (PMEL#5079)
112. Snyder, M.R.* & C.A. Stepien**, N.T. Marshall*, H. Scheppeler*, C. Black, K. Czajkowski. 2020. Detecting aquatic invasive species in bait and pond stores with targeted environmental DNA high-throughput sequencing metabarcoding assays: Angler, retailer, and manager implications. *Biological Conservation*. 245: 108430. <https://doi.org/10.1016/j.biocon.2020.108430> (Stepien is co-first author & lead PI; Stepien's student advisees=Snyder, Marshall & Scheppeler, USEPA project funded to Stepien and Czajkowski, PMEL #4940).
111. Stepien, C.A.** , D.W. Leaman, M.D. Niner*. 2020. Rhabdovirus (Viral Haemorrhagic Septicaemia Virus) Chapter 4, pp. 58–84, In: Woo, P.T.K, J-A. Leong, & K. Buchmann. *Climate Change and Infectious Fish Diseases*. CABI, England, U.K. (NSF grant) <https://www.cabi.org/bookshop/book/9781789243277/> PMEL5022
110. Snyder, M.R.* & C.A. Stepien**. 2020. Invasive species in the Lake Erie watershed, pp. 175–184. Ch. In: *Richness and Rarity: The Natural History of Lucas County* (ed. E. Tramer), University of Toledo Press.
109. Stepien, C.A.** , M.R. Snyder*, A.E. Elz*. 2019. Invasion genetics of the silver carp *Hypophthalmichthys molitrix* across North America: Differentiation of fronts, introgression, and eDNA metabarcoding detection. *PLoS One*, 14(3): e0203012. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0203012> (PMEL#4825)(EPA grant)
108. Marshall, N.T.* & C.A. Stepien** 2019. Invasion genetics from eDNA and thousands of larvae: A targeted metabarcoding assay that distinguishes species and population variation of zebra and quagga mussels. *Ecology and Evolution*. 9:1–24. <https://doi.org/10.1002/ece3.4985>. Top 10% download certificate. (PMEL#4967) (*Stepien PhD student; Stepien USEPA grant)
107. Canonico, G., Buttigieg, P.L... Stepien, C.A., ...et al. 2019. Global observational needs and resources for marine biodiversity. *Frontiers of Marine Science* 6:367. <https://doi.org/10.3389/fmars.2019.00367> (PMEL#4988)
106. Marshall, N.T.* & C.A. Stepien**. 2019. Dreissenidae. Ch. 36 In: Cummings, K. (ed.). *Freshwater Mollusks of the World*. Johns Hopkins University Press. <https://jhupbooks.press.jhu.edu/title/freshwater-mollusks-world> https://www.researchgate.net/publication/332947756_Dreissenidae_Gray_1840 (*=CAS PhD student, Stepien USEPA grant)
105. Stepien, C.A. **, D. Eddins*, M.R. Snyder*, N.T. Marshall*. 2018. Genetic change versus stasis over the time course of invasions: Trajectories of two concurrent, allopatric introductions of the Eurasian ruffe. *Aquatic Invasions* (Special Issue: Biological Invasions in Inland Waters). 13(4):537–552. (Stepien's NSF & EPA grants) <https://doi.org/10.3391/ai.2018.13.4.11> (*Eddins=CAS undergraduate advisee, *Snyder+Marshall=PhD students, PMEL #4610)
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 (writing+data analysis at PMEL, *Snyder=Stepien's PhD student, Stepien USEPA; PMEL#4640)

* = grad students, undergrad students, techs, post-docs directed/supervised by Stepien

**= Stepien corresponding author & lead P.I.

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 Journal of Ichthyology*. 5(1):64–73. DOI: 10.22034/iji.v5i1.257 <http://ijichthyol.org/index.php/iji/article/view/5-5/217> (PMEL#4858, Tajbakhsk was a PhD grad student helped by Stepien with analysis)
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. (grants to research team from USDA, PMEL#4627)
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. 12(5): e0177643. Top 10% PLOS One Citation Award. <https://doi.org/10.1371/journal.pone.0177643> (Stepien's USEPA project, postdoc Klymus advisee; PhD student Marshall advisee; PMEL#4616)
100. Trebitz, A., J. Hoffman, J. Darling, E. Pilgrim, J. Kelly, E. Brown, W. Chadderton, S. Egan, E. Grey, S. Hashsham, K.E. 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> (Stepien/Leaman NSF&USDA)
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*. 26(4), 1075–1090. doi: 10.1111/mec.13997 Featured on NOAA PMEL website: (Stepien's NSF&USEPA; PMEL#4608; Snyder =Grad student) <https://pubmed.ncbi.nlm.nih.gov/28029720/>
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/wo1/doi/10.1111/jfb.13296/full> (PMEL#4609)
95. Stepien, C.A.** , F. Calzonetti, J.M. Bossenbroek, K.P. Czajkowski, T.L. Bolin & 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.researchgate.net/publication/3357516861_Enhancing_Environmental_Sustainability_Through_A_University_Field_Station
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*. 17: 1345–1362. DOI 10.1007/s10592-016-0866-x (Sea Grant +NSF to Stepien, *AEH=Stepien's postdoc; Stepien USEPA grant)
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 (Stepien's Ponto-Caspian collaborations)
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://journals.plos.org/plosone/article?id=10.1371/journal.pone.0135146> (NSF, USDA; *CAS PhD students)
91. 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. (Stepien USEPA grant)

PUBLICATIONS, Cont. **=P.I., Corresponding lead, *=Students, Postdocs, Techs under C.A. Stepien

90. 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 (NSF funded to Stepien, Chen + team) AGU Research Spotlight: <https://eos.org/research-spotlights/great-lakes-hold-sway-over-water-and-carbon-cycling> (NSF sensor network)
89. Stepien, C.A.** & A.E. Haponski* 2015. Taxonomy, distribution, and evolution of the Percidae. 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. (Stepien USEPA, *CAS postdoc)
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.
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. (funded by Stepien’s NSF grant for Ponto-Caspian collaborations on invasive gobies)
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 (Stepien’s Sea Grant & NSF; Sullivan was Stepien’s Master’s student advisee)
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 Research*. 40 (2014): 1–6. doi:10.1016/j.jglr.2014.03.003 <https://www.sciencedirect.com/journal/journal-of-great-lakes-research/vol/40/suppl/S2>
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14. Stepien, C.A.** , H. Phillips*, J.A. Adler* & P.J. Mangold*. 1991. Biogeographic relationships of rocky intertidal fishes in an area of cold water upwelling off Baja California, Mexico. *Pacific Science*. 45(1): 63–71. <https://pdfs.semanticscholar.org/db6b/c570f958ad4a537b08c67a9acb7d3010ed27.pdf> (3 undergrad students sponsored by Stepien)
13. Stepien, C.A.** & R.H. Rosenblatt. 1991. Patterns of gene flow and genetic divergence in the northeastern Pacific Clinidae (Teleostei: Blennioidei), based on allozyme and morphological data. *Copeia*. 1991(4): 873–896. DOI: 10.2307/1446084 (postdoc NSF project at Scripps, Rosenblatt=Stepien's advisor)
12. Stepien, C.A.** 1990. Population structures, diets, and biogeographic relationships of a rocky intertidal fish assemblage in central Chile: High levels of herbivory in a temperate system. *Bulletin of Marine Science*. 47(3): 598–612. (National Geographic Soc. & Univ. Calif. Project grants to Stepien during postdoc)

PUBLICATIONS, Cont. **=P.I., Corresponding lead, *=Students, Postdocs, Techs under C.A. Stepien

11. Stepien, C.A.** , M. Glatcke* & K.M. Fink*. 1988. Regulation and significance of color patterns of the spotted kelpfish, *Gibbonsia elegans* Cooper. *Copeia*. 1988(1): 7–15. DOI: 10.2307/1445916 (funded by Hubbs Sea World to Stepien; project with Stepien's undergraduates)
10. Stepien, C.A.** & R.H. Rosenblatt. 1988. A phylogenetic and distributional analysis of the eastern Pacific myxodin Clinidae (kelpfishes). *American Zoologist* 48(4): A36. (NSF postdoc project at Scripps, Rosenblatt=advisor)
9. Stepien, C.A.** 1987. Color pattern and habitat differences between male, female, and juvenile giant kelpfish. *Bulletin of Marine Science*. 41(1): 45–58. (Ph.D. Project; Theodore Roosevelt Grant, American Mus. Nat. Hist.)
8. Stepien, C.A.** 1986a. Life history and larval development of the giant kelpfish, *Heterostichus rostratus* Girard. *Fishery Bulletin, United States*. 84(4): 809–826. <https://spo.nmfs.noaa.gov/sites/default/files/pdf/content/1986/844/stepien.pdf> (PhD publication; NOAA CA SeaGrant support)
7. Stepien, C.A.** 1986b. Regulation of color morphic patterns in the giant kelpfish: Genetic versus environmental factors. *Journal of Experimental Marine Biology and Ecology*. 100: 181–208. DOI: 10.1016/0022-0981(86)90162-0 (Stepien PhD publication: Lerner-Grey Grant for Marine Research)
6. Stepien, C.A. & R.C. Brusca. 1985. Nocturnal attacks on nearshore fishes by crustacean zooplankton. *Marine Ecology Progress Series*. 25: 91–105. DOI: 10.3354/meps025091 (Stepien PhD publication; Brusca=mentor)
5. Stepien, C.A.** 1985. Regulation of color morphic patterns in the giant kelpfish, *Heterostichus rostratus*: Genetic versus environmental factors. *Ph.D. Dissertation, University of Southern California*, Los Angeles. 318 pp. (Theodore Roosevelt Mem. Grant, Lerner-Grey Grant, Sigma Xi Grant; ASIH: Stoye Best Paper Award)
4. Demski, L.S. & C.A. Stepien. 1983. Ch. 10, pp. 341–346. Behavioral effects of electrical stimulation of the brain. In: *Fish Neurobiology*, Vol. II, R.E. Davis & R.G. Northcutt (eds.), University of Michigan Press, Ann Arbor, Mich. (Stepien's undergraduate research project at Gulf Coast Research Lab, with Leo S. Demski)
3. Stepien, C.A.** & K. Rich*. 1981. Coloration pattern and size sexual dimorphism in the giant kelpfish, *Heterostichus rostratus* Girard (Family Clinidae). *American Zoologist* 21(4): 921.
2. Stepien, C.A.** 1980. Sexually dimorphic coloration in the giant kelpfish, *Heterostichus rostratus* Girard, Family Clinidae. *American Zoologist*. 20(4):825. (M.S. research project, California Sea Grant grad student trainee)
1. Demski, L.S. & C.A. Stepien. 1978. Light organ display evoked by electrical stimulation of the fish brain. *American Zoologist*. 18(3): 587. (Stepien's undergraduate research project at Gulf Coast Research Lab, advised by Demski)

BOOK

Molecular Systematics of Fishes. 1997. Academic Press (co-edited with Thomas Kocher) Reviewed in *Nature* 1997, 389:30 as "A must for teleost taxonomists and general fans of phylogenetic systematics".

Also reviewed by *Copeia* and *Quarterly Review* and *Zoological Journal of the Linnean Society*

Paperback and Kindle editions, 2011 (still is selling today)

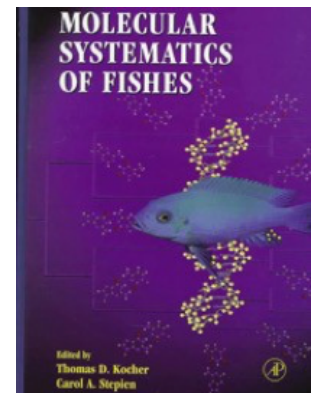
<https://www.amazon.com/Molecular-Systematics-Fishes-Thomas-Kocher/dp/0123886589>

2023 review on Amazon. Lead chapter by Stepien is highly cited.

Review paper update in progress for 2026!! (C.A. Stepien & Thomas Near 2026)

With *Taylor & Francis* book & Symposium launch in 2027

Book: *30 Years of Molecular Systematics of Fishes: The Future* (2027)



Collaborative NOAA Federal 10-Year Research Plan Publications (peer-reviewed):

- Busch, D.S., S. Alin, R.A. Feely, P. McElhany, M. Poe, B. Carter, J. Leonard, D. Lipski, J. Roletto, C. A. Stepien, and J. Waddell (2020): West Coast region acidification research. Chapter 5 in *NOAA Ocean, Coastal, and Great Lakes Acidification Research Plan: 2020–2029*, Jewett, E.B., E.B. Osborne, K.M. Arzayus, K. Osgood, B.J. DeAngelo, and J.M. Mintz (eds.) <https://oceanacidification.noaa.gov/ResearchPlan2020>. PMEL #5138
- Cross, J.N., W.C. Long, D.J. Pilcher, T.P. Hurst, R.A. Feely, and C.A. Stepien (2020): Arctic region acidification research. Chapter 4 in *NOAA Ocean, Coastal, and Great Lakes Acidification Research Plan: 2020–2029*, Jewett, E.B., E.B. Osborne, K.M. Arzayus, K. Osgood, B.J. DeAngelo, and J.M. Mintz (eds.), <https://oceanacidification.noaa.gov/ResearchPlan2020>. (PMEL #5137)

Collaborative NOAA Federal Research Plan Publications (peer-reviewed), Continued:

- Feely, R.A., S. Alin, B. Carter, J.P. Dunne, D.K. Gledhill, L. Jiang, V. Lance, C.A. Stepien, A. Sutton, and R. Wanninkhof (2020): Open ocean region acidification research. Chapter 2 in *NOAA Ocean, Coastal, and Great Lakes Acidification Research Plan: 2020–2029*, Jewett, E.B., E.B. Osborne, K.M. Arzayus, K. Osgood, B.J. DeAngelo, and J.M. Mintz (eds.), <https://oceanacidification.noaa.gov/ResearchPlan2020>. (PMEL#5134)

Contemporary Multiagency White Paper/Technical Report:

- **National Invasive Species Council** (NISC Publication, Multi-Agency Collaborative White Paper), 2022 (with USGS, DOI, USACE, NOAA, NASA, DOD, etc.). Burgiel, S., ... C.A. Stepien... et al. *Environmental DNA as a Tool for Invasive Species Management*” <https://doi.gov/sites/doi.gov/files/nisc-edna-white-paper-2022-final.pdf>

GRANTS AND AWARDS ~\$14.24 million to date as PI or co-PI; 50+ awards

Recent: \$1.81 million as PI or co-PI

Current:

- **Denmark Independent Research Fund** in Natural Sciences. *The Genetic Paradox of Invasive Species investigated in Invasive Freshwater Mussels 2024–2026*. coPI with international collaborator Dr. Michael Møller Hansen, Aarhus University, Denmark. Funding postdoc Dr. Antti Miettinen, research expenses, conferences. 2026 paper in review. Stepien is working on a companion US NSF Grant.

Completed Grants as Lead P.I./coP.I. (~\$12.43 million); Recent & Selected are detailed below

- **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), R. Feely (PMEL), J. Keister (U Washington), J. Cross (PMEL), D. Butterfield (PMEL JISAO). Federal Partners: Alaska Fishery Science Center, National Marine Sanctuary, Olympic Coast, State Partners: Washington Ocean Acidification Center, Washington State Department of Ecology. \$440,000, 2 years, 2018–20. Renewed for 2019–2024 (\$500,000/yr.), \$1,940,000 total. (CAS 2024 paper).
- **NOAA OAR**. *Enhancing the blue economy through metagenomic characterization of hydrothermal vent and methane seep communities* PI: Carol A. Stepien (PMEL); Co PI: D. Butterfield (PMEL JISAO), Federal Partner: National Marine Sanctuaries, Olympic Coast. \$440,000, 4 years, 2018–2020. Renewed for 2019–2024, total ~\$1,040,000. (Stepien supported postdoc S. McAllister with this award; CAS 2024 paper)
- **NOAA Washington Sea Grant**. coPI (with J. Keister, Univ. Washington). *Metagenomic fluctuations of zooplankton and ichthyoplankton communities in the Salish Sea: Association with water chemistry*. A18OAR41700, \$230,000, 2018–2024 (completing 6 publications from this award, including DNA in 2024, after pandemic delay) 2024 popular article: <https://wsg.washington.edu/the-pulse-of-the-ocean/>
- **US Environmental Protection Agency (USEPA)**. Lead 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. Solocho, and T. Ackerman. GL-00E018, \$500,000, 3 years, 2016–19. *subawarded molecular genetics part to University of Washington with job change. Public TV special (4 papers; supported 2 PhD students+2 undergrads)
- **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. Subawarded part to University of Washington with job change 2016–19. (*CAS supported PhD student M. Niner with this; 6 papers led by CAS & DL)

Selected Completed Grants as Lead P.I./coP.I., Continued (~\$14.24 million)

- **US Environmental Protection Agency (USEPA).** Lead 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. (5 papers, CAS postdoc Klymus; CAS PhD student Marshall suppt.)
- **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. 300+ applicants for 2016. Engaged Black, Hispanic, and 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; project then continued).
- **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, 2009–2018. USDA-ARS CRIS project #3655-31320-002-00D, under specific cooperative agreement #58-3655-9-748. (moved to coPI in 2017, with job change) (6 papers, CAS support for 2 PhD students)
- **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; 5 publications).
- **National Science Foundation (NSF)** PI of Graduate Student Training 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 32 graduate students from Environmental Sciences, Civil Engineering, Biology, Geography, and Geology; 2500 high school students, 10 high schools, 84 science & engineering publications, 344 conference presentations, 69 class activities.
- **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. (5 papers, CAS support for PhD students M. Niner, L. Pierce)
- **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. (3 papers, CAS support for PhD student L. Pierce)
- **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, 2009–14 (5yrs)
- **Ohio Board of Regents & University 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. (supported CAS grad. student)
- **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. (supported CAS PhD student A. Haponski)
- **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. (supported CAS M.S. student; 4 publications)
- **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. (Developed the Lake Erie Research Center 10-year plan)

Selected Completed Grants as Lead P.I./coP.I., Continued (~\$14.24 million)

- **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:
 - NSF REU Supplement for *Undergraduate Research*. DEB-0727913 \$6,000
 - 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
- **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. (*6 papers published*)

GRANT REVIEW PANELS AND GRANT REVIEWER

- **NSF, National Science Foundation, Panelist** (~25 panels, including 2026, 2025, 2024 (3), 2023, 2022, 2021, 2020, 2019, etc., dating to 1996). Biological Oceanography, Evolutionary Genetics, Integrated Organismal Systems, Molecular and Cellular Biology, NSF Research Training (NRT) for Graduate Students, POSE Open Source Ecosystems, Sustainability Research Networks, Systematic Biology, EPSCoR Review (Panel Lead), Artificial Intelligence & Machine Learning, Small Business Innovation Research (SBIR)
- **NSF Grant Reviewer:** NSF Field Stations and Marine Labs, Biological Oceanography, Evolutionary Genetics, Integrated Organismal Systems, Molecular and Cellular Biology, Sustainability Research Networks, Systematic Biology, EPSCOR, Machine Learning & Artificial Intelligence (2025, 24). POSE Open-Source Ecosystems, Small Business Innovation Research (SBIR)
- **Israel Ministry of Innovation, Science and Technology** (2024)
- **USDA Aquaculture Research Panels**
- **National Oceanic and Atmospheric Administration (NOAA)** Panels and Grant Reviewer, Sea Grant Biotechnology, Ocean Exploration Research
- **AAAS, American Association for the Advancement of Science,** Aquatic Ecology and Technology Grant Panels
- **USGS, U.S. Geological Survey,** Biological Resources Discipline, Global Change Program
- **Austrian National Science Foundation**
- **National Geographic Society Research**
- **NSERC, Natural Sciences and Engineering Research Council of Canada**
- **NOAA Sea Grant College Program,** U.S. (Panels), State Reviews: Wisconsin, Michigan, South Carolina, Florida, New York, Maryland, Ohio
- **Great Lakes Fishery Commission**
- **Great Lakes Fishery Trust**
- **US Fish and Wildlife Foundation**

AWARDS AND HONORS

C.A. Stepien

- American Association for the Advancement of Science (AAAS), Elected Fellow, 2017–present
 - *Lifetime Honor. “For distinguished contributions to the fields of molecular evolutionary ecology and conservation genetics, particularly invasive and native populations, and mentorship of graduate and undergraduate students.”*
- Research Associate/Collaborator of the National Museum of Natural History, Smithsonian, 2018–2025
- Bowling Green University Alumnus Award for Research Achievements in Marine Biology, 2023
- Mote Marine Laboratory and Aquarium, Volunteer service awards, 2023 and 2025
- Albert Nelson Marquis Lifetime Achievement Award, Who’s Who in America, 2016
- University of Toledo Outstanding Grants”man”ship Award, 2017
- Distinguished University Professor Appointment University of Toledo, 2012–Lifetime honor
 - *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)*
- Distinguished University Professor Lecturer, University of Toledo
- NSF Highlighted Research (Climate Change Land–Lake Sensor Network)
- American Geophysical Union, Highlighted Research Selection
- University of Toledo Sabbatical, Evolutionary Genetics and Genomics Research in Australia on Reef fishes
- Ohio Lake Erie Commission Outstanding Organization Award, for heading the Lake Erie Research Center
- Sigma Xi Scientific Honorary Dion D. Raftopoulos Outstanding Researcher Award
- Outstanding Faculty Research Award, University of Toledo
- Editor’s Awards for Service to the Journal of Great Lakes Research (2 separate years)
- Elected to Board of Directors, International Association for Great Lakes Research
- Service Award from the International Association for Great Lakes Research
- League of Women Voter’s Environmental Award
- 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
- American Men and Women of Science
- Who’s Who in American Education
- George B. Mayer Assistant Professor Chair of Urban and Environmental Studies, Case Western Res. Univ.
- Scripps Institution of Oceanography Director’s Student Mentorship Award
- Stoye First Place Graduate Student Best Paper award in Ichthyology, American Society of Ichthyologists and Herpetologists annual conference, while at University of Southern California as a PhD student
- First place Research Presentation Award in Environmental Sciences, Southern California Academy of Sciences Annual conference, while at University of Southern California as a graduate student
- Best Student Paper Award, Beta Beta Beta Biological Honorary Society annual conference, while an undergrad.

CURRENT JOURNAL EDITOR and EDITORIAL BOARDS

- ***Environmental DNA*** (Wiley) **Associate Editor**, 2020–2023; **Editorial Board**, 2023–present
 - <https://onlinelibrary.wiley.com/page/journal/26374943/homepage/editorial-board>
 - *“Dedicated to the Study and Use of Environmental DNA for Basic and Applied Science”*
 - Represented the journal to the National Marine eDNA conference
 - Represented the journal at the Government eDNA Working Group conferences (published 2023 & 2025)
- ***Molecular Phylogenetics and Evolution*** (Elsevier), **Editorial Board**, 1999–present
 - <https://www.journals.elsevier.com/molecular-phylogenetics-and-evolution/editorial-board>
 - *“Dedicated to bringing Darwin's dream within grasp” – to “have fairly true genealogical trees of each great kingdom of Nature”*

CURRENT JOURNAL EDITOR and EDITORIAL BOARDS

C.A. Stepien

- **Ecological Processes** (Springer) **Associate Editor** (J. Chen, Editor-in-Chief), 2016–present
 - <https://ecologicalprocesses.springeropen.com/about/editorial-board/carol-stepien>
 - Founding Associate Editor
 - “Focus on the underlying processes responsible for the dynamics and functions of ecological systems at multiple spatial and temporal scales”
- **DNA, Editorial Board**, 2022–present
 - <https://www.mdpi.com/journal/dna/editors>
 - “Novel research findings, reviews and communications in DNA-related technologies, genomic structure, bioinformatics and cytogenomics”
- **Aquatic Invasions** (REABIC) **Associate Editor**, 2021–present
 - <https://www.reabic.net/journals/ai/Editors.aspx>
 - “Academic research of biological invasions in inland and coastal water ecosystems from around the world”

Completed Journal Editor Service

- **Biological Invasions**, Associate Editor (Genetics), 2009–2017
“Focus on the patterns and processes of biological invasions in terrestrial, freshwater, and marine (including brackish) ecosystems”
- **Journal of Great Lakes Research**, Associate Editor (Genetics & Fish Ecology), 1998–2013
 - Special Issue Editor, 2012–2017
 - Two Top Editor’s awards
 - “Research on Large Lakes of the World and their Watersheds”

SCIENTIFIC JOURNAL REVIEWER EXPERIENCE

- *Aquatic Conservation*
- *Aquatic Sciences*
- *Biochemical Genetics*
- *Biological Invasions* (Associate Editor, 10 years)
- *Biological Journal of the Linnean Society*
- *Canadian Journal of Fisheries and Aquatic Sciences*
- *Canadian Journal of Zoology*
- *Copeia* (American Society of Ichthyologists and Herpetologists); Now *Ichthyology and Herpetology*
- *Diversity and Distributions*
- *DNA*
 - Editorial Board 2023–present
- *Ecology and Evolution*
- *Ecological Processes* (Associate Editor, 2016–present)
- *Environmental Biology of Fishes*
- *Environmental DNA*
 - Editorial Board 2023–present
 - Associate Editor, 2020–2023; Editorial Board 2023–present
 - Representative at eDNA National & International Conferences
- *Evolution* (Society for the Study of Evolution)
- *Evolutionary Applications*
- *Fisheries* (American Fisheries Society)
- *Freshwater Biology*
- *Genes*
- *Genetics*

- *Heredity*
- *Hydrobiologia*
- *ICES Journal of Marine Science*
- *Ichthyology and Herpetology*
- *Journal of Biogeography*
- *Journal of Experimental Marine Biology and Ecology*
- *Journal of Fish Biology*
- *Journal of Great Lakes Research*
 - Associate Editor, 15 years, 2 Editors Awards
- *Journal of the Marine Biological Association of the United Kingdom*
- *Journal of Virological Methods*
- *Management of Biological Invasions*
- *Marine Biology*
- *Marine Ecology Progress Series*
- *Molecular Biology and Evolution*
- *Molecular Ecology*
- *Molecular Ecology Resources*
- *Marine Fisheries Review* (2024–present)
- *Molecular Phylogenetics and Evolution*
 - Editorial Board 1999–present)
- *North American Journal of Fisheries Management*
- *Oecologia*
- *Oikos*
- *One Earth* (2024–present)
- *PLOS One*
- *Prairie Naturalist*
- *Proceedings of the Royal Society B*
- *Scientific Reports @Nature.Com*
- *Transactions of the American Fisheries Society*
- *U.S. Fishery Bulletin*
- *Viruses*
- *Zoological Journal of the Linnean Society*
- *Zootaxa*

BOARDS OF DIRECTORS

- University of Washington NOAA Cooperative Institute Science Advisory Board 2017–2022
(partnered University of Washington, University of Alaska, and Oregon State University)
- Oregon State University NOAA Cooperative Institute Science Advisory Board 2017–2022
(partnered among Oregon State U., University of Oregon, Oregon Technological Institute, et al.)
- International Association for Great Lakes Research (IAGLR) Board (elected), headed annual conference
- NOAA CILER Cooperative Institute for Limnology & Ecosystems Research (headed by University of Michigan), Board of Directors 2011–2016 (University of Toledo was a full partner under Stepien)
- National Center for Water Quality, Board of Directors, Heidelberg University 2012–2016

MEMBERSHIPS AND SERVICE IN PROFESSIONAL SOCIETIES

C.A. Stepien

- American Association for the Advancement of Science (AAAS)
 - Elected Fellow 2017–present
- American Association of University Women (AAUW)
 - Keynote speaker on Women in Science
- American Fisheries Society (AFS)
 - Keynote speaker, symposium organizer
 - Reviewer, best paper judge
 - Wright Student Travel Award committee 2010–2023
 - Early Career Award Committee 2020–2025
 - Genetics and Invasive Species Sections
- American Geophysical Union (AGU)
 - Conference mentor (multiple years)
 - Best paper judge 2022
- American Society of Ichthyologists and Herpetologists (ASIH)
 - Symposium coordinator (multiple years)
 - Best paper award judge (multiple years)
 - Invited panelist speaker (multiple years)
 - Graduate student mentoring program (multiple years)
- American Women in Science (AWIS)
- Ecological Society of America (ESA)
 - Mentor
 - Sustainability Science committee and awards, 2020–present
- European Society of Evolutionary Biology (ESEB)
- Group on Earth’s Biodiversity Observation Network (GeoBON)
- International Association for Great Lakes Research (IAGLR)
 - Board of Directors 2004–2007
 - Genetics editor 2002–2012
 - Special issues editor 2002–2017
 - Local committee annual conference 1999
 - Symposium coordinator, 1999–2018
 - Reviewer & Best paper judge, 1998–present (multiple years)
 - Chair and coordinator of 2009 annual conference
- Society for Women in Marine Science (SWMS)
- Society for the Study of Evolution (SSE)
- Society of Systematic Biologists (SSB)
- World Aquaculture Society (WAS)
- World Society for Virology (WSV)

UNIVERSITY TENURE AND PROMOTION EXTERNAL REVIEWER

- University of South Carolina
- New Mexico State University
- California State University Long Beach
- Miami University
- Mississippi State University (2024)
- University of Western Kentucky

RESEARCH PRESENTATIONS 297+ conference presentations & seminars by *Carol Stepien*
Presentations at Scientific Societies and Research Conferences, Selected talks listed

- **Government eDNA Working Group (GEDWG)**, 2026, “*Species patterns of planktonic mollusk larvae along the Salish Sea from multi-gene nuclear and mtDNA metabarcoding: Annual and seasonal relationships to oceanographic conditions*” (+presentations 2023, 2021, 2019,18,17,16)
- **Conservation Genetics**, 2024, “*Purging and the genetic paradox of invasions*”, by postdoc Dr. Anti Miettinen
- **National Marine Environmental DNA Workshop**, 2022 (Costa Mesa, CA) “*Metabarcoding identifications and tracking of invasive species from eDNA and bulk samples: Implications for management in marine and aquatic ecosystems*”, presented by C. Stepien <https://drive.google.com/file/d/1T7Kxq4p0MdPvgLs9oSHUmMZvYuFBGOUM/view>
- **Ocean Sciences Meeting**, 2022 (Honolulu) “*Co-evolutionary trajectory of Piscine novirhabdovirus (Viral Hemorrhagic Septicemia) and its fish hosts: Analogies to invasive species*” 2020 (San Diego), Invited NOAA lightning talk; 2018 (Portland) oral and poster presentations, symposium *Rediscovering marine biodiversity: Meta-barcoding of Microbes to Mammals*, “*Targeted metagenomic assays to understand marine community responses in species composition, diversity, and population genetics*”
- **International Conference on Aquatic Invasive Species**, 2022 (Brussels, 2 talks), “*Understanding AIS using Multi-gene Metabarcoding assays: Strengths, Caveats, and Upscaling for the Future*”; 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, Miami (talk, poster)
- **NOAA, Ocean Acidification Program Meeting** presentation on *Marine Genomics*, January 2020, Miami, FL
- **Alaska Marine Sciences Symposium**, 2020 (co-authored oral presentation given by mentee M. Galaska from Stepien’s G3 lab), 2019 (poster), 2018, Anchorage “*Metagenomic assays to assess Alaskan marine community species identities, diversity, representation, and population patterns*” (given by Stepien)
- **OceansObs19**, Honolulu, HI, September 2019 (presentations & symposia given by Stepien)
- **PICES**, Victoria, Canada, October 2019 (oral presentation) “*Community species identities, diversity, and patterns across the Salish Sea: Metagenomic analyses of zooplankton and eDNA*”
- **American Fisheries Society**, 2019 (2 invited symposium presentations by Stepien), Reno, 2018, Atlantic City (symposium talk and 3 by students), 2017 (2 invited orals at symposia in Tampa, 1 other by student), 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 with students, co-led session), 2013 at Purdue U. (talk, 2 posters, 2 student talks), 2011 in Duluth (talk, poster, 3 student talks, poster), 2010 in Toronto (talk, 2 posters), 2009 at Univ. Toledo (3 talks, 5 with students, 4 posters), 2008 Univ. of Trent (talk, 3 others with students), 2007 at Penn. State Univ. (3 talks + 3 with grad students, lead for session on fish ecology), 2006 at Univ. Windsor (talk, 5 others with postdoc +4 grad students)
- **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 (SFS)**, 2014 in Portland OR (2 invited symposium talks, environmental DNA and large genomic/genomic data sets, and 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 Conference**, 2014 in Oman (1 presentation, 1 poster)
- **EcoSummit (4th International EcoSummit for Ecological Sustainability)**, 2012 in Columbus OH (1 talk and 1 poster by Stepien, 2 talks & 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)

INVITED PLENARY & SEMINAR PRESENTATIONS at Universities, Museums & Agencies

- University of Maryland, Eastern Shore, 2025. “*Marine Metagenomics & Ecology over Time & Space*”.
- University of Southern Mississippi, 2024. “*Understanding Marine Biodiversity, Change & Adaptations*”
- University of Mississippi, 2024. “*Water, Biodiversity & Habitat Resources with Molecular Ecology*”
- University of South Carolina, 2024. “*Metagenomics for Exploring Biological Diversity*”
- Department Seminar, Water School, Florida Gulf Coast University, 2023
- Department Seminar, Ecology and Conservation Biology, Texas A&M University, 2021
- Invited full-length **Plenary, Environmental DNA** Government 3-day Conference, St. Petersburg, FL, 2019. “*Assessing biodiversity using eDNA and genomic/bioinformatic technology: Strengths, caveats, and upscaling for the future*”. (there was just one other plenary talk)
- **Invited Opening Plenary, International Workshop on Environmental Genomics**, Newfoundland, Canada, June 12, 2019. “*Assessing marine biodiversity in planktonic, coastal, and deep-sea ecosystems using eDNA and genomic/bioinformatic technology: a scalable solution for the future?*”
- Research Seminars (2), Hatfield Marine Science Center, Oregon State University, 2019 and 2017
- Invited Research Seminar, NOAA Alaskan Fisheries Science Center, Auke Bay, Juneau, AK, Sept. 2018
- Research Seminar, NOAA Great Lakes Environmental Research Lab, August 1, 2018.
- **Invited Capstone Plenary, SIBIC2018, the VII Congress of the Iberian Society for Ichthyology**, Faro, Portugal, June 14, 2018. “*Using Metagenomics to Assess Entire Fish Communities at all Life Stages: Species Diversity, Composition, Abundances, and Population Genetics*”
- NOAA ‘Omics Conference, Atlantic Oceanographic and Meteorological Laboratory, Nov. 21, 2017
- Friday Harbor Laboratory, University of Washington, October 18, 2017
- National Marine Fisheries Service, Northwest Fisheries Science Center, October 12, 2017, “*Resolving the dynamics 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 Invited Seminar, 2017, “*Understanding population genetic & genomic patterns of marine & aquatic communities over time & space*”
- 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, Corpus Christi, 2016
- University of Maryland, 2016
- University of Nebraska, 2016
- University of North Carolina
- University of Texas, San Antonio. “*Environmental challenges facing our Great Lakes: Leading to the Toledo water crisis*”
- University of Toledo, Distinguished University Professor Award Lecture. “*Understanding our Great Lakes Fishes with DNA*”
- Florida International University
- University of Melbourne, Australia
- Victoria Museum, Melbourne, Australia
- University of Tasmania, Australia
- United Arab Emirates Environmental Agency. *Evaluating the genetic stock structure of fishes: Comparisons between the Arabian Gulf and the North American Great Lakes.*
- University of Warsaw, Poland
- University of Buffalo. “*Population genetics of invasive mussels and gobies over time and space*”
- Sigma Xi Scientific Honorary Dion Raftopoulos/Sigma Xi Award for Outstanding Research Lecture
- University of Toledo, Law School. “*Invasive species and legal questions*”. Full-length Seminar
- University of Toledo, Dept. of Chemistry. *Lake Erie Center research and invasion genetics.*

INVITED SEMINAR PRESENTATIONS at Universities, Museums & Agencies, Cont., C.A. Stepien

- Russian Academy of Sciences, St. Petersburg, Russia
- Moscow State University, Moscow, Russia
- Bowling Green University, NSF SETGO program. “*Career insights of a marine biologist*”
- Keynote Speaker for 38th Annual Meeting of the Commonwealth of Pennsylvania University Biologists
- US Geological Service, Great Lakes Science Center, Ann Arbor, Michigan
- New Mexico State University, Las Cruces, New Mexico
- Grand Valley State University, Michigan
- Bowling Green University, Ohio “*Molecular genetics and mentorship of women in science*”
- Odessa University and Ukraine Academy of Sciences, Ukraine, “*The genetics of species invasions*”
- Stone Laboratory, Ohio State University seminar
- Beckman Sequencing Conference, University of Pittsburgh, Pennsylvania
- University of Akron, Ohio Ecology lunch seminar; and separate Department of Biology seminar (2)
- Great Lakes Environmental Research Laboratory (GLERL), Ann Arbor, MI
- John Carroll University, Cleveland, Ohio
- Kent State University, Kent, Ohio
- Woods Hole Oceanographic Institute, Massachusetts
- Case Western Reserve University, Genetics Department, Medical School, & Biology Dept. (5 seminars)
- University of North Carolina, North Carolina
- University of Minnesota, Minneapolis, Minnesota
- University of Louisville, Louisville, Kentucky
- Ohio Wesleyan University, Delaware, Ohio
- Heidelberg College, Tiffin, Ohio
- University of Florida, Gainesville, Florida
- University of South Florida, St. Petersburg, Florida
- Smithsonian Institution, Department of Molecular Systematics, Washington D.C.
- University of Madeira, Portugal (3 lecture mini-course on *Genetics and Evolution*)
- University of Tokyo, Tokyo, Japan
- Kochi University, Kochi, Japan
- Hakodate University, Hokkaido, Japan
- Scripps Institution of Oceanography, University of California (5 full-length seminars)
- Colorado State University, Ft. Collins, Colorado
- University of Kansas, Kansas
- Ohio University, Athens, Ohio
- University of Massachusetts, Boston, Mass.
- University of North Dakota, Grand Forks, North Dakota
- Tulane University, New Orleans, Louisiana
- American Museum of Natural History, New York, New York
- University of California, Santa Cruz, California
- University of Texas, Austin, Texas
- California State University, Fullerton, California
- Los Angeles County Museum of Natural History, Los Angeles, California
- San Diego County Museum of Natural History, San Diego, California
- San Diego State University, San Diego, California
- Instituto de Oceanologia, Universidad del Valparaiso, Chile
- Instituto de Pesca Nacional, INIDEP, Mar del Plata Argentina
- Hubbs Marine Research Institute, San Diego, California
- University of Southern California, Los Angeles, California
- University of San Diego, San Diego, California
- Chesapeake Biological Laboratory, University of Maryland, Maryland

Graduated Ph.D. Students under Stepien as Lead Advisor & Dissertation Committee Head

- **Nathaniel T. Marshall, Ph.D.** 2014–2019. The University of Toledo. Dissertation: *Advancing Genetic Analyses and Implementing eDNA Metabarcoding for Invasive Species Detection and Macroinvertebrate Community Composition*. Recipient of 2015 Malacological Society of London Travel Award 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; one of 12 selected to compete for best paper award). Bain Scholarship from the Carey Foundation (2016–2017), 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 award (2018). Six papers published from graduate work with Stepien: *PLOS ONE* 2017, *Aquatic Invasions* 2018 and 2021, *Ecology and Evolution* 2019, *Biological Conservation* 2020 (co- author), *Environmental DNA* 2020; three as co-author with Stepien, three as first author. Book chapter (first author, Stepien co-author) on Mollusks. Defended April 25, 2019. After: NOAA CIGLR postdoc, University of Michigan and NOAA Great Lakes Environmental Research Lab. Now: Environmental DNA Lead scientist, Stantec Ltd., Cincinnati, Ohio. Recent collaboration: 2024 paper as lead author, co-authored by Stepien on metabarcoding. 2025 paper as lead author, Stepien as co-author. Others upcoming in ocean metabarcoding with Stepien as lead author.
- **Megan D. Niner, Ph.D.** 2014–2019. The University of Toledo. Dissertation: *Evolutionary Patterns and Occurrences of the Fish Viral Hemorrhagic Septicemia 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), co-first author of paper in *Ecology and Evolution* (2020), first author of paper in *PLOS One* (2021). Co-author of CABI book chapter on fish Novirhabdoviruses, with Stepien as lead author. Presentations at Midwest Graduate Research Symposium (2016, 2017, 2018, 2019), Ohio Research Review (2015, 2016), International Assoc. Great Lakes Research (2017), American Fisheries Society (2018). Graduated August 2019. Now employed with Arcas Biosciences.
- **Matthew R. Snyder, Ph.D.** 2013–2019. The University of Toledo. Dissertation: *Environmental DNA Detection and Population Genetic Patterns of Native and Invasive Great Lakes Fishes*. Full Graduate Fellowship Scholarship (stipend, tuition, fees) award nominated for by Stepien from University of Toledo (2015–19). 2015 Paul W. Rodgers (IAGLR) Scholarship Award for Fisheries Science. Friends of Lake Erie Center Ph.D. student award (2016). Research Presentations: American Fisheries Society (2017, 2018- one of 12 selected to compete for best student paper award in 2018; Great Lakes Fishery Commission Travel Scholarship), Int. Conf. Aquatic Invasive Species (2015, 2016), IAGLR (2015, 2017), Midwest Graduate Research Symposium (2015, 2016), Ohio Research Review (2015), and One NOAA (2019). Co-first author in *Molecular Ecology* (2018) and *Biological Conservation* (2020), with Stepien. First author in *Metabarcoding and Metagenomics* (2019), with Stepien as co-author. Three others published in *North American Association of Fishery Management* (2018), *Aquatic Invasions*, and *PLOS One*, as co-author with Stepien. Author of book chapter with Stepien. Co-authored 2023 poster led by Stepien. Employed at graduation in Bioinformatics at Covance, Inc., 2019–2022; now at Quest Diagnostics as Sr. Bioinformatics Engineer.
- **Amanda Haponski, Ph.D.** 2009–2013. 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), 6 as co-author with Stepien (*Mol. Phyl. Evol.* 2010, *Mol. Ecol.* 2009, *Great Lakes Commission* 2010; 3 book chapters in 2 books). 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(2013–14). Next: postdoc in University of Michigan mollusk lab (2015–19). Bioinformatician at Progenity, Ann Arbor, MI (2019–2022), Covance, Inc., Ann Arbor MI (2022–present)

LEAD Ph.D. GRADUATE RESEARCH ADVISOR & COMMITTEE CHAIR, Cont. C. A. Stepien

Graduated Ph.D. Students, Stepien as Lead Advisor & Dissertation Committee Head, Continued

- **Lindsey R. Pierce (Friedrich), Ph.D.** 2009–2013. 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, poster), 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*, *J. Virological Methods* 2013, *PLOS One* 2013 as lead, with Stepien co-author. Two other papers as co-author in *Journal of Great Lakes Research* and *PLOS One* 2015, with Stepien. After: Postdoctoral Research associate, Cleveland Clinic on Malaria Evolution. Now: Cleveland Clinic Genomics Facility Researcher.
- **Osvaldo Jhonatan Sepulveda Villet, Ph.D.** 2005–2011. 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 other 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, Assistant Professor of Aquaculture, University of Wisconsin, Milwaukee (2015–2023). Now: USDA NICRAC Aquaculture (2023–pres.) Co-authored rainbow trout paper, with Stepien and another as co-author in 2018.
- **Matthew E. Neilson, Ph.D.** 2004–2009. 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. Served on Stepien's Ph.D. student's (M. Snyder) Ph.D. Committee 2019. Collaborated with Stepien on poster for 2022 in 2nd Marine Environmental DNA Workshop, and working on a manuscript for special issue of *Environmental DNA*. Helped to co-mentor Ms. Aileen Le, undergraduate researcher on collaborative project 2022–2024. Upcoming collab. Publications.
- **Joshua E. Brown, Ph.D.** 2004–2009. 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. After: NOAA Sea Grant Knauss Fellow, Washington, D.C. Present: Employed by NOAA Sea Grant Research Office, Washington, D.C., 2010–present.
- **Joseph E. Faber, Ph.D.** 1993–1997. 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). Present: Associate Professor at Ohio University, Lancaster branch campus, OH.

POSTDOCTORAL RESEARCHERS

Current Postdoctoral Research Collaborator

- **Antti Miettinen, Ph.D.**, Aarhus University, Denmark. 2024–2026. (lead advisor is Michael Hansen, Ph.D.)
12/2025 Paper in Review “ Bottlenecked but booming: Strong inbreeding in a highly invasive freshwater mussel (*Dreissena polymorpha*) (Stepien is co-author); *Conservation Genetics* presentation 2024. Grants in progress.

Completed Postdoctoral Advisees with Stepien as +Lead or co-Lead Advisor

- **Sean McAllister, Ph.D.** Dec. 2019–2024. *Targeted multi-gene metabarcoding analyses of hydrothermal vent and methane seep communities*. Through University of Washington NOAA JISAO/CICOES. (Dr. David Butterfield was lead sponsor, Stepien co-sponsor). 2024 paper in *DNA*, with Stepien as lead author.
- **Katy E. 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 as co-author in 2017 in *Journal of Environmental Management*; another as co-author in 2024; another as co-author in 2025. Currently employed as Research Scientist by USGS, Columbia Env. Res. Ctr. 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. 2015–2019: postdoctoral scholar at University of Michigan Museum of Natural History (under Dr. D. O’Foighill). After: employed at Progenity, Ann Arbor, MI as a Bioinformatician. Now: Covance, Inc.
- **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, 2015, Two 2025 publications with Stepien. Editorial collaborations. 2022–present: Project work to preserve and archive Ukraine samples & research ecological changes due to the Russia–Ukraine War.
- **Rex Meade Strange, Ph.D.** +2004–2006. Lake Erie Center, University of Toledo. *Lake Erie walleye genetics*, funded by Stepien’s Sea Grant funds. Seven 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 as lead with Stepien (Stepien wrote 90% of each), *Fishery Bulletin* and *Canadian Journal of Fisheries and Aquatic Sciences*. (Now: Assoc. Prof. of Developmental Biology, Southern Indiana University)
- **Meriel Brooks, Ph.D.** +1992–1993. 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 & Committee Chair, Graduated

- **Timothy Sullivan, M.S.** 2011–2013. 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 Association. 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: National Program Leader, Division of Animal Systems, USDA NIFA, Kansas City (GS-14 position).
- **Jo Ann Banda, M.S.** 2009–2011. The University of Toledo. Thesis: *Temporal and spatial genetic patterns among walleye spawning populations*. Talk research presentations at International Association 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

RESEARCH ADVISOR, Continued

C.A. Stepien

M.S. THESIS STUDENTS with Stepien as Lead Advisor & Committee Head, Graduated, Continued

- **Amanda Haponski**, M.S. 2005–2007. 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, with Stepien as Ph.D. advisor (2013). After Ph.D.: postdoc at University of Michigan.
- **Jennifer M. Skidmore**, M.S. 1997–2000. 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, Publication co-authored with Stepien. Present: NOAA, Washington D.C.
- **Alison K. Dillon**, M.S. 1996–1998. 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. 1995–1998. 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. After: Employed by Novagen biotech company, Madison, WI.
- **Mark D. Chandler**, M.S. 1993–1996. Case Western Reserve University. Thesis: *Population variation in DNA sequences of the ruffe in Great Lakes versus European populations*. T.A.ed Stepien's Marine Ecology course. Awarded NOAA Knauss Congressional Fellowship, Washington, D.C., 1996. Publication co-author with Stepien. Present: Employed by NOAA, Washington, D.C.

VISITING INTERNATIONAL GRADUATE RESEARCH STUDENTS in Residence with Stepien

- **Shotaro Hirase**, 2011–12. then-Ph.D. student from Marine Field Science Center, Graduate School of Agriculture, Tohoku University, Japan. *Temporal population genetics of the round goby*. Shotaro worked in Stepien's lab after his lab was destroyed by the earthquake and tsunami. A professional relationship has been regularly maintained through present, 2026.
- **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*, Two publications as co-author with Stepien. A professional relationship has been regularly maintained.
- **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 (G. Orti, lead) on which Stepien was a collaborator/coPI.

UNDERGRADUATE RESEARCH STUDENTS Sponsored/Led/Advised/Mentored by Stepien

(N=49 total) Some Selected are listed; most Longer-term ones Presented & Published

- **Research Experiences for Undergraduates NSF Program, Lead PI**. 2015–2017. Led 10–11 each Summer, 2 years (Stepien left for NOAA position, completed publications and mentoring with students)
- **Mary Ferrito**, B.S. Marine Biology student, 2025-present. University of North Carolina Wilmington.
- **Aileen Le**, B.S., 2022–3 student from Colorado School of Mines, *eDNA Metabarcoding analyses for aquatic invasive species*. 2022–3. Library documentation project led by Stepien, along with USGS collaborator Dr. Matthew Neilson.
- **Dakota Hunt**, B.S., Summer Research Experience, Univ. Washington, JISAO, (from Carleton College), Summer 2018. Poster at Alaska Marine Science Symposium, January 2019, "*Optimizing protocols for preservation, extraction, and PCR amplification of environmental DNA (eDNA) from seawater*"
Project video: <https://jisao.uw.edu/internships/interns/dakota-hunt/> After: employed at the Fred Hutchinson Cancer Center, Seattle.

UNDERGRADUATE RESEARCH STUDENTS (selected examples) Sponsored by Stepien, Continued

- **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, 2020 publication co-authored with Stepien & grad students. Research presentations 2016 at ICAIS, IAGLR, Midwest Graduate Student Symposium, Ohio Research Review. *After*: M.S. degree from Miami University; After that: Ph.D. student at Ohio State University.
- **Ellen Lee**, B.S. Summer Research Experience, Univ. Washington, JISAO (from Bryn Mawr College), 8 weeks, summer 2019. *R-analyses: Salish Sea metabarcode community diversity*. *After*: USC grad student.
- **Devon Eddins**, B.S. student 2013–2016. *Population genetics of the invasive ruffe fish*. (NSF REU with Stepien’s program). Paper published co-first-authored with Stepien and graduate students, 2018, *Aquatic Invasions*. Research presentations 2016 at ICAIS, IAGLR, Midwest Graduate Student Symposium, Ohio Research Review. *After*: Ph.D. student at Emory University, graduated December 2021. After that: Postdoc at U.S. NIH Center for Disease Control (CDC).
- **Shelby Edwards**, B.S. student 2015–16. Field & lab work in Stepien lab. *Fish virus molecular ecology*.
- **Lola Masenberg**, B.S. student 2013–16. *Phylogenetic and biogeographic relationships of the Myxodin Clinidae: An egg laying relict fish group*. Became: Law school student.
- **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-Haponski). Became: 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 as co-author, with Stepien as lead, *Journal of Fish Biology* (2017).
- **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 of the American Fisheries Society*). *After*: M.S. Graduate student, Delaware State University and University of Toledo. Now: US Fish & Wildlife Service.

HIGH SCHOOL STUDENTS AND TEACHER RESEARCH SPONSOR & MENTOR

HIGH SCHOOL RESEARCH STUDENTS Sponsored/Led by Stepien (N=12 in Stepien’s lab (one example given) and 2500 others through Stepien’s NSF program for STEM high school mentoring with grad students

- **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 was published (*Journal of Great Lakes Research*). Became: University of Toledo undergraduate researcher in Stepien lab.
- **NSF Graduate Student Training and Research Program**, Mentored and Introduced **2500 High School students**, including many underserved minority students, to STEM mentoring and careers. Led by Stepien with 7 coPIs and 32 Participating graduate students (2008–2015) across Science & Engineering fields. Many High school students entered and won local & Ohio Science Fair competitions.

UNIVERSITY ADVISEMENT RECORD, Continued

C. A. Stepien

HIGH SCHOOL TEACHERS Conducting Research with Stepien (selected examples)

- **NSF Gk-12 Program Lead Principal Investigator**, \$3 million, 8 teachers/year, 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*).
- **Thomas Marth**, M.S. **Brush High School Honor's Biology teacher, Cleveland Ohio. Genetic Divergence across a low-head dam: An analysis using logperch and greenside darters.** Stepien mentee, Publication with Stepien and her graduate student. Supported by Stepien's USEPA grant. (*Journal of Great Lakes Research*).

Ph.D. DISSERTATION COMMITTEE MEMBER

- **Dr. Qi (Bruce) Ko** (Dr. Douglas Leaman, Biology) University of Toledo, Ph.D.
- **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**, Dept. of Marine Zoology, (Dr. Ray Wilson, Advisor) University of South Florida, Ph.D.
- **Dr. Christopher Burridge**, University of Tasmania, Australia, Ph.D.

M.S. THESIS COMMITTEE MEMBER

- **Wade Weaver**, Biology Department, University of Toledo (Dr. Douglas Leaman) (graduated)
- **Adam Russell**, Dept. Environmental Sciences, Univ. Toledo (Dr. Daryl Moorhead) (graduated)
- **Adam Pore**, Biology Department, University of Toledo (Dr. Douglas Leaman) (graduated)
- **Kristen DeVanna**, Dept. Environmental Sciences, Univ. Toledo. (Dr. Christine Mayer) (graduated)
- **Brian Elkington**, Dept. Environmental Sciences, Univ. Toledo (Dr. Christine Mayer) (graduated)

RESEARCH EXPEDITIONS, FIELD RESEARCH LEADERSHIP & EXPERIENCE

- eDNA Sampling & Sea Turtle Monitoring, Mote Marine Lab & Aquarium, Sarasota FL (2022–2025)
- Research cruises, Zooplankton & eDNA sampling on Olympic Coast National Marine Sanctuary (2017–2022)
(Publications ongoing; 2024, and others upcoming)
- Washington Ocean Acidification Cruise sampling, Salish Sea (spring, summer, fall, 2018–2022)
(publications 2024, 2025; more upcoming)
- Research trip to Australia to work on systematics of clinid fishes (with Australian Museum, Sydney; University of Tasmania; Victoria Museum, Melbourne, University of Melbourne)
- Research trip to United Arab Emirates regarding fishery resources and stock structure in the Arabian Gulf, with their EPA (several publications with students, 2 in 2023, 1 in 2024)
- Principal investigator of research fish & invertebrate collections in the Black and Caspian Seas
 - Funded by National Science Foundation, to Azerbaijan, Russia, Ukraine & Poland (15 pubs)

RESEARCH EXPEDITIONS, FIELD RESEARCH LEADERSHIP & EXPERIENCE, Continued

- Principal investigator of river and lake fish collections in Ohio and Michigan (leading students, postdocs) (*25 publications*)
- Principal investigator of research collection for mussels and fishes and lecturing trip to Ukraine and Black Sea, Sea of Azov, and Crimea region (Stepien led team of 5 scientists and graduate students; *8 publications*)
 - NSF funded (Stepien, PI) (*28 publications*)
- Principal investigator of research collection and lecturing trip to Madeira, Portugal, funded by Portugal
- Principal investigator of research collecting trip to Japan, NW Pacific fishes (*4 publications*)
 - The University of Tokyo, Hakodate University, and Kochi University lectures + field
 - Funded by the National Research Council to Stepien as PI (*4 publications*)
- Principal investigator of research expedition to Chile, fish genetics, ecology, and biogeography (*4 pubs.*)
 - Funded by the University of California Research Expeditions Program to Stepien & Rosenblatt
- Experienced Advanced Open Water Scuba Diver and Underwater Researcher –600+ logged research dives
- Principal investigator of research expedition to Argentina to study fishery genetics and biogeography
 - Funded by the National Geographic Society to Stepien (*3 publications*)
- Research cruises and expeditions with Scripps Aquarium, UCSD to Mexico, fishery genetics (*3 pubs.*)
- Principal investigator of research on intertidal and kelp forest fish population genetics in Mexico (*3 pubs.*)
- Research Scientist, Central America, Costa Rica, Panama, and Mexico; intertidal fish & invertebrate diversity and ecology
 - Funded by Charles Lindberg Foundation (R.C. Brusca, PI)
- Research Scientist, Midwater trawling cruises to Mexico and California; fish diversity
 - Funded by NSF (B. Nafpaktitis & R.N. Lavenberg, PIs)

UNIVERSITY TEACHING EXPERIENCE

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

- Aquatic Ecology
- Animal Behavior
- Biogeography
- Conservation Biology
- Conservation Ecology
- Conservation Genetics and Genomics
- DNA Data Analysis & Bioinformatics
- Environmental Biology
- Environmental DNA
- Evolutionary Biology
- Fisheries Genetics and Genomics
- Genetics and Genomics
- Ichthyology and Fisheries
- Invasion Ecology
- Marine Biology
- Marine Ecology
- Molecular Ecology
- Population Genetics and Genomics
- Systematic Biology
- Vertebrate Biology

UNIVERSITY TEACHING EXPERIENCE, *Continued*

C.A. Stepien

Courses Taught at the University of Toledo, Distinguished Full Professor

- Environmental DNA and eRNA: Metagenomics and Bioinformatic Applications for Aquatic Ecology, Graduate seminar
- Advances in Biogeography (graduate and advanced undergraduate students)
- Great Lakes Fish Ecology (co-taught with Dr. Patrick Kocovsky, USGS; grad. and advanced undergrad.)
- Invasion Ecology (graduate and advanced undergraduate students)
- Conservation Genomics (graduate students)
- Advances in Population Genetics and Genomics (graduate students)
- Conservation Genetics (graduate and advanced undergraduate students)
- Evolutionary and Ecological Adaptations in Aquatic Ecosystems
- Lake Erie Fisheries Management (graduate and advanced undergraduate students) (with Dr. Patrick Kocovsky, USGS, and Dr. Christine Mayer)
- Landscape Genetics (graduate and advanced undergraduate levels)
- Phylogenetic Systematics Methods
- Molecular Evolutionary Ecology (graduate and advanced undergraduate)
- How to Write and Publish a Scientific Paper (graduate, multi-disciplinary)
- NSF program Environmental Science Education (graduate students, teachers, led team-teaching)
- Fisheries genetics/genomics seminars (5 years)
- Research methods for early college high school students (3 years)
- Speciation: Concepts and controversy (graduate)

Courses Taught at Cleveland State University, Associate Professor

- 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, Public Health, Biology, and Chemistry graduate students
- Marine Ecology (Junior-senior/Graduate full course)

Courses Taught at Case Western Reserve University, Assistant Professor

- 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

Courses Taught at University of San Diego, San Diego, CA, Visiting Instructor

- Independent Research: Marlen Glatke, Keith Fink (both published with Stepien)
- General Biology for Non-majors, Lecture and Lab
- Environmental Biology, Senior Seminar
- Marine Biology, Lecture and Lab

Courses Taught at California State University, Dominguez Hills, Los Angeles, CA, Lecturer.

- Invertebrate Zoology, Lecture and Lab (majors)
- Ecology, Lecture and Lab (majors)

Courses Taught at University of Southern California, Graduate Teaching Assistant

- Marine Biology Lab + some Lectures
- Marine Ecology Lab + some Lectures
- General Biology Lab
- Ichthyology Lab + some Lectures
- Invertebrate Zoology Lab + some Lectures
- Environmental Biology for Non-Majors, Discussion section + some Lectures

SERVICE: PRESENT, CONTINUING & RECENT

C.A. Stepien

- Mote Marine Laboratory and Aquarium, Education guide & Aquaculture eDNA research (2021–2025)
 - Sea Turtle beach patrol monitoring (2023–2024)
 - Service Awards, 2023, 2025
- GEDWG, Government eDNA Working Group 2017–present (leadership team; multi-agency)
 - leadership team; multi-agency
 - publication conference leads in 2023 and 2025
- American Fisheries Society, Genetics Travel Scholarship Committee 2015–2025
- NSF Grant Review Panels: Integrated Organismal Systems, Systematic Biology, Evolutionary Genetics, Biological Oceanography, Sustainability Research Networks, Molecular and Cellular Biology, EPSCOR Site (Lead Panelist), Machine Learning & Artificial Intelligence, NSF Graduate Research Training (NRT) Program, various years; 1998, 2005, 2010, 2011, 2012, 2015, 2016, 2018, 2021, 2022, 2023, 2024, 2025
- *Environmental DNA* (Wiley) journal, Associate editor 2020–2023
 - Covered Second National Workshop on Marine Environmental DNA in September 2022 for the journal, wrote and published Commentary on the meeting.
 - Covered Government eDNA Working Group meeting for the journal in 2023, lead authored Commentary on the meeting
 - Lead authored Government eDNA Working Group meeting Commentary for 2024 meeting, publication in 2025
- *Environmental DNA* (Wiley) journal Editorial Board, 2023–Present
- *Ecological Processes* (Springer) journal, Associate editor 2016–present
- *Molecular Phylogenetics and Evolution* (Elsevier), Editorial board 1999–present
- *DNA* Editorial Board, 2022–present

PROFESSIONAL SERVICE & OUTREACH RECORD

NOAA SERVICE RECORD (2016–2021)

- Joint Institute for Study of the Atmosphere and Ocean (JISAO/CICOES) Advisory Board, Headed by University of Washington (University of Washington, Oregon State University, University of Alaska)
- JISAO/CICOES Postdoctoral Selection Committee, and Grants Selection Committee
- Cooperative Institute for Marine Resources Studies (CIMRS) Science Advisory Council, led by Oregon State University at Hatfield Marine Science Center
- NOAA OAR Ocean Portfolio Team, monthly research coordination and communication
- NOAA Omics Team, coordination and development of Genomics/Omics methods and policy
- NOAA OAR Best Paper Award Committee
- NOAA Interagency Genomics Collaboration Group (NOAA, USGS, USACE, USFWS, USDA)
- Ocean Acidification Roundtable Group (Multi-agency)
- NOAA Ocean Explorations Research (OER) Grant Review Panels
- NOAA Collections Management Group (6 members; preservation of NOAA cruise and research samples for the future, museum archives at Smithsonian Institution and other Museum repositories) wrote and developed first adopted NOAA policy
- Reviewer for the NOAA Undergraduate Scholarship applications
- Committee on NOAA PMEL Diversity and Inclusion, founding and active member
- NOAA PMEL Representative to National Diversity and Inclusion Summit at Headquarters
- Volunteer at Science Weekend, Seattle Aquarium, designed & led eDNA educational displays for the public
- Volunteer at NOAA Science Camp, all years, summers
- American Assoc. University Women Tech Trek STEM Science Camp panelist for Middle School girls, all years, summers

NOAA SERVICE RECORD (2016–2021). Continued

- Public Television Special on Invasive Species
<https://www.wgte.org/television/local-programs/wgte-town-hall-detecting-invasive-species-in-the-great-lakes>
- *Environmental DNA* scientific journal, Associate Editor
- Genetics Editor, *Aquatic Invasions* scientific journal
- *Ecological Processes*, scientific journal, Associate Editor for aquatic and marine ecology
- *Molecular Phylogenetics and Evolution*, journal, Editorial Board

UNIVERSITY SERVICE RECORD

NOAA CILER Cooperative Institute for Limnology & Ecosystems Research (University of Michigan)

Board of Directors (5 years)

- National Center for Water Quality, Board of Directors, Heidelberg University (5 years)
- *Journal of Great Lakes Research* Editor (18 years)
 - Special Issues (5 years)
 - Lead Genetics Editor (18 years)
 - Two Editor's Awards
- Coordinator, Misc. Workshops for Ohio Division of Wildlife on DNA Markers for Lake Erie Fishes
30–50 participants (25 years)
- 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.
- AAAS review panel: Aquatic ecology applications and technology
- Board of Directors, International Association for Great Lakes Research (IAGLR) (3 years)
 - Co-chair Outreach Committee (two years)
 - IAGLR Service Award
- USGS Global Change National Grant Review Panel, Washington, D.C.
- Great Lakes Aquatic Ecosystem Research Consortium, Ohio Sea Grant Program meeting
- Intel/ISEF International Science and Engineering Grand Awards Fair Judge
- 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
- Dept. of Laboratory Animal Resources Search Committee, for new lead Veterinarian
- University of Toledo Water Task Force
 - Chair of Committee on Land Use–Water Quality (8 years)
- 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.
- Sigma Xi Scientific Society, University of Toledo Chapter, Chapter President (5 years)
 - Led Faculty & Student Awards, Implemented Sigma Xi Science Cafes
 - Represented University at National Sigma Xi conference
 - Coordinated membership, activities, public relations, reporting (3 years)
 - Sigma Xi Research Conference Judge (8 years)
- University of Toledo President's Commission on the Ottawa River (on-campus River Restoration), 12 yrs.
- Department of Environmental Sciences Graduate Student Recruitment committee
- Midwest Graduate Symposium Research Presentation Judge and Sigma Xi Award Presenter, 5 years

UNIVERSITY SERVICE RECORD, Continued

- 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 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. Jonathan Bossenbroek)
- Sigma Xi Research Conference Judge (8 years)
- Faculty Search Committee, Engineering School (Chemical and Civil Departments), Sustainability position (hire of Dr. Youngwoo Seo)
- Principal Investigator and Organizer for Summer National Science Foundation Research Experience for Undergraduates program (ongoing through 2024)
- Co-Principal Investigator and Organizer for NSF-sponsored 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 across Environmental Sciences, Biology, Chemistry, Public Health & Engineering
- Advisory Board for University Automated DNA Analysis Joint Facility
- Conference Chair, Environmental Risk Assessment Conference & Workshops
- Graduate Affairs Committee, Dept. of Biology, Case Western Reserve University
- Seminar Committee, Department of Biology, Case Western Reserve University

ADDITIONAL EDUCATION & MENTORING SERVICE RECORD

- Mentoring and shadowing by Westside Montessori 7th–8th grade students, (2 per year, each spring for one week, 12 years). Students regularly commented that it was their school's best assignment!
- Mentoring High School students from St. John's, Cardinal Stritch, & Notre Dame High Schools High School Teachers in Student Watershed Watch, 10 years (most recently 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 (annually at conferences and beyond)
- School Outreach Programs lectures on *Endangered species* and *Marine biology careers* 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
- JASON Science Project Site Teacher Education Workshop Coordinator. *Research Explorations In Extreme Environments*, Coral Reef Project Workshop Coordinator for elementary through high school teachers (85 participated)
- NSF Excel Mentoring Program for middle school girls. Sponsored 8th grade students
- Beachwood High School Science Mentoring Program. Sponsored senior student
- CWRU Undergraduate Biology Society invited panelist for discussions on Science and Religion

PROFESSIONAL SERVICE & OUTREACH RECORD, Continued

C.A. Stepien

ADDITIONAL EDUCATION & MENTORING SERVICE, Continued

- NSF Excel Science and Engineering summer Program for young women. Middle school plan and conduct laboratory activities; 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, Euclid, Ohio at alma mater
- Ohio Science Fair Project Sponsor, multiple years
- National Science Foundation Young Scholars Program Sponsor for High School Students in Science, Invited Speaker