

CURRICULUM VITAE

JASON H. KNOUFT

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Saint Louis University
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CURRENT POSITIONS

- Professor, Department of Biology, Saint Louis University
- Large River Ecologist, National Great Rivers Research and Education Center
- Water and Climate Security Analyst (Intelligence Research Specialist, Expert Consultant), U.S. Department of State, Bureau of Intelligence and Research

EDUCATION

2001 Ph.D. Biology, University of Illinois, Urbana-Champaign
1996 M.S. Biology, Drexel University
1994 B.S. Biology, Drexel University

RESEARCH INTERESTS

Impacts of global climate and land use changes on freshwater systems, sensitivity of physical and biological systems to environmental perturbation, watershed hydrology, ecohydrology of urban watersheds, Geographic Information Systems (GIS), conservation of freshwater systems

ACADEMIC AND PROFESSIONAL POSITIONS

2023 - Water and Climate Security Analyst (Intelligence Research Specialist, Expert Consultant), U.S. Department of State, Bureau of Intelligence and Research
2021 - 2022 Jefferson Science Fellow, Intelligence Research Specialist, U.S. Department of State, Bureau of Intelligence and Research, Office of the Geographer and Global Issues
2021 - Large River Ecologist, National Great Rivers Research and Education Center
2017 - Professor, Department of Biology, Saint Louis University
2012 - 2017 Associate Professor, Department of Biology, Saint Louis University
2006 - 2012 Assistant Professor, Department of Biology, Saint Louis University
2004 - 2006 Assistant Professor, Department of Ecology and Evolutionary Biology, University of Colorado, Boulder
2004 - 2006 Curator of Vertebrates, University of Colorado Museum
2003 Visiting Scholar, Museum of Vertebrate Zoology, University of California at Berkeley
2002 - 2004 NSF Postdoctoral Fellow in Biological Informatics, Department of Biology, Washington University in St. Louis. Advisor: Dr. Jonathan Losos
2001 - 2002 Postdoctoral Research Associate, Department of Biological Sciences, University of Notre Dame. Advisor: Dr. Gary Lamberti

1997 - 2001 Graduate Research Assistant, Illinois Natural History Survey, University of Illinois, Urbana-Champaign

ADMINISTRATIVE AND ADVISORY POSITIONS

- 2023 - Panel member, Independent study on potential environmental effects of nuclear war, National Academies of Sciences, Engineering, and Medicine
- 2022 - Deputy representative of the U.S. Bureau of Intelligence and Research to the Climate Security Advisory Council
- 2022 - Deputy ex officio representative, Climate Security Roundtable, National Academies of Sciences, Engineering, and Medicine
- 2019 - 2021 Development Committee, St. Louis Aquarium Foundation
- 2018 - 2019 National Advisory Council for Environmental Policy and Technology (NACEPT), United States Environmental Protection Agency
- 2017 - National Socio-Environmental Synthesis Center (SESYNC) Scientific Review Committee Member
- 2017 - 2018 External Review Committee Member, South Central Climate Science Center, Department of the Interior
- 2016 - 2018 Director, Center for Sustainability, Saint Louis University
- 2015 - 2020 National Science Foundation appointed iDigBio External Advisory Board Member
- 2014 - Scientific Advisor, Danxia Geoparks, Shaanxi Institute Geological Survey
- 2011 - 2014 Associate Director, Center for Environmental Sciences, Saint Louis University

PUBLICATIONS

Maria Kuruvilla, M. Dell, A., Olson, A. R., **Knouft, J. H.**, Grady, J. M., Forbes, J. and Berdahl, A. M. 2023. The effect of temperature on fish swimming and schooling is context dependent. *Oikos* 2023:e09202

Knouft, J. H. 2022. Freshwater Resources and COVID-19. In: Laituri, M., Richardson, R.B., Kim, J. (eds) *The Geographies of COVID-19. Global Perspectives on Health Geography*. Springer, Cham.

Botero-Acosta, A., Ficklin, D. L., Ehsani, N., and **Knouft, J. H.** 2022. Climate induced changes in streamflow and water temperature in basins across the Atlantic Coast of the United States: An opportunity for nature-based regional management. *Journal of Hydrology: Regional Studies* 44:101202.

Baraza, T., Hernandez, N. F., Sebok, J. N., Wu, C-L, Hasenmueller, E. A., and **Knouft, J. H.** 2022. Integrating land cover, point source pollution, and watershed hydrologic processes data to understand the distribution of microplastics in riverbed sediments. *Environmental Pollution* 2022:119852.

Liu, Z., Zhang, L., **Knouft, J. H.**, and Ling, F. Q. 2022. Meter-scale variation within a single transect demands attention to taxon accumulation curves in riverine microbiome studies. *Frontiers of Environmental Science & Engineering* 16:64.

- Knouft, J. H.**, Botero-Acosta, A. Wu C. L., Charry, B., Chu, M. L., Dell, A. I., Hall, D. M., and Herrington S. J. 2021. Forested riparian buffers as climate adaptation tools for management of riverine flow and thermal regimes: a case study in the Meramec River basin. *Sustainability* 13:1877.
- Wu C. L., Herrington S. J., Charry, B., Chu, M. L., and **Knouft, J. H.** 2021. Assessing the potential of riparian reforestation to facilitate watershed climate adaptation. *Journal of Environmental Management* 277:111431.
- Hall, D. M., Gilbertz, S. J., Anderson, M. B., Avellaneda, P. M., Ficklin, D. L., **Knouft, J. H.**, and Lowry, C. S. 2021. Mechanisms for engaging social systems in freshwater science research. *Freshwater Science* 40:245-251.
- Pagliari, M. D. and **Knouft, J. H.** 2020. Differential effects of the urban heat island on thermal responses of freshwater fishes from unmanaged and managed systems. *Science of the Total Environment* 723:e138084.
- Avellaneda, P. M., Ficklin, D. L., Lowry, C. S., **Knouft, J. H.**, and Hall, D. M. 2020. Improving hydrological models with the assimilation of crowdsourced data. *Water Resources Research* 56:e2019WR026325.
- Beachum, C. E., Michel, M. J., and **Knouft, J. H.** 2020. Metabolic rates from Bluntnose minnow (*Pimephales notatus*) populations at lower latitudes are more sensitive to changes in temperature than populations at higher latitudes. *Ecology of Freshwater Fish* 29:210-219.
- Haake, D. and **Knouft, J. H.** 2019. Comparison of contributions to chloride in urban stormwater from winter brine and rock salt application. *Environmental Science & Technology* 53:11888–11895.
- Krause, K. Chien, H., Ficklin, D. L., Hall, D. M., Schuster, G. A., Swannack, T. M., Taylor, C. A., and **Knouft, J. H.** 2019. Streamflow regimes and physical habitat are more important than water temperature when projecting future distributions of crayfish species. *Climatic Change* 154:107-123.
- VanCampennolle, M., **Knouft, J. H.**, and Ficklin, D. L. 2019. Multispecies conservation of freshwater fish assemblages in response to climate change in the southeastern United States. *Diversity and Distributions* 25:1388-1398.
- Andres, K. A., Chien, H., and **Knouft, J. H.** 2019. Projected responses to climate-induced hydrologic changes vary among populations of freshwater species. *Science of the Total Environment* 671:421-430.
- VanCampennolle, M., Ficklin, D. L., and **Knouft, J. H.** 2019. Hydrologic and thermal conditions occupied by a species within a watershed predict the geographic extent of occurrence of freshwater fishes. *Ecology* 100:e2071.

- Neupane, R. P., Ficklin, D. L., **Knouft, J. H.**, Ehsani, N., and Cibin, R. 2019. Hydrologic responses to projected climate change in ecologically diverse watersheds of the Gulf Coast, USA. *International Journal of Climatology* 39:2227-2243.
- Krause, K., Wu, C. L., Chu, M., and **Knouft, J. H.** 2019. Fish assemblage- environment relationships suggest differential trophic responses to heavy metal contamination. *Freshwater Biology* 64:632-642.
- Niu, S. Q., Haake, D. M., and **Knouft J. H.** 2019. Gut content biomass of stream fishes: associations with streamflow velocity, population density, and prey abundance at two spatial scales. *Hydrobiologia* 826:85–97.
- Peterson, K. T., Sagan, V., Sidike, P., Hasenmueller, E. A., Sloan, J. J., and **Knouft, J. H.** 2019. Machine learning based ensemble prediction of water quality variables using feature-level and decision-level fusion with proximal remote sensing. *Photogrammetric Engineering and Remote Sensing* 85:39-50.
- Ficklin, D. L., Abatzoglou, J. T., Robeson, S. M., Null, S. E., and **Knouft, J. H.** 2018. Natural and managed watersheds show similar responses to recent climate change. *Proceedings of the National Academy of Sciences* 115:8553-8557.
- Knouft, J. H.** 2018. Appropriate application of information from biodiversity databases is critical when investigating species distributions and diversity: a comment on Dallas et al. (2017). *Ecology Letters* 21:1119-1120.
- Knouft, J. H.** and Ficklin, D. L. 2017. The potential impacts of climate change on biodiversity in flowing freshwater systems. *Annual Review of Ecology, Evolution, and Systematics* 48:111-133
- Michel, M. J., Chien, H., Beachum, C. E., Bennett, M., and **Knouft, J. H.** 2017. Climate change, hydrology, and fish morphology: predictions using phenotype-environment associations. *Climatic Change* 140:563-576.
- Niu, S. Q. and **Knouft, J. H.** 2017. Hydrologic characteristics, food resource abundance, and spatial variation in stream assemblages. *Ecohydrology* 10:e1770.
- Knouft, J. H.** and Anthony, M. A. 2016. Climate and local abundance in freshwater fishes. *Royal Society Open Science* 3:160093.
- Ficklin, D. L., Robeson, S. M., and **Knouft, J. H.** 2016. Impacts of recent climate change on trends in baseflow and stormflow in United States watersheds. *Geophysical Research Letters* 43:5079-5088.
- Beachum, C. E., Michel, M. J., and **Knouft, J. H.** 2016. Differential responses of body shape to local and reach scale stream flow in two freshwater fish species. *Ecology of Freshwater Fish* 25:446–454.

- Schönhuth, S., Beachum, C. E., **Knouft, J. H.**, and Mayden, R. L. 2016. Phylogenetic relationships of the widely distributed minnow *Pimephales notatus* (Cyprinidae) in North America. *Zootaxa* 4168:38-60.
- Knouft, J. H.** and Chu, M. L. 2015. Integrating landscape-scale hydrological models with urban expansion scenarios to predict the impacts of urbanization-induced flow alterations on freshwater fish assemblages. *Ecohydrology* 8:273-285.
- Ficklin, D. L., Barnhart, B. L., **Knouft, J. H.**, Stewart, I. T., Maurer, E. P., Letsinger, S. L., and Whittaker, G. W. 2014. Climate change and stream temperature projections in the Columbia River basin: biological implications of spatial variation in hydrologic drivers. *Hydrology and Earth System Sciences* 18:4897-4912.
- Michel, M. J., Chevin, L-M., and **Knouft, J. H.** 2014. Evolution of phenotype-environment associations by genetic responses to selection and phenotypic plasticity in a temporally autocorrelated environment. *Evolution* 68:1374-1384.
- Chu, M. L., Ghulam, A., **Knouft, J. H.**, and Pan, Z. 2014. Exploring the trends and shifts in rainfall and runoff patterns: a case study of the Meramec and Gasconade watersheds. *Journal of the American Water Resources Association* 50:928-942.
- Michel, M. J. and **Knouft, J. H.** 2014. The effects of environmental change on the spatial and environmental determinants of community-level traits. *Landscape Ecology* 29:467-477.
- Chien, H., Yeh, P. J., and **Knouft, J. H.** 2013. Modeling the potential impacts of climate change on streamflow in agricultural watersheds of the Midwestern United States. *Journal of Hydrology* 491:73-88.
- Chu, M. L., **Knouft, J. H.**, Ghulam, A., Pan, Z., and Guzman, J. 2013. Impacts of urbanization on river flow frequency: A controlled experimental modeling-based evaluation approach. *Journal of Hydrology* 495:1-12.
- Niu, S. Q., Franczyk, M., and **Knouft, J. H.** 2012. Regional species richness, hydrological characteristics and the local species richness of assemblages of North American stream fishes. *Freshwater Biology* 57:2367-2377.
- Michel, M. J. and **Knouft, J. H.** 2012. Niche variability and its consequences for species distribution modeling. *PLoS ONE* 7:e44932.
- Trumbo, D. R., Burgett, A. A., Hopkins, R. L., Biro, E. G., Chase, J. M., and **Knouft, J. H.** 2012. Integrating local breeding pond, landcover, and climate factors in predicting amphibian distributions. *Landscape Ecology* 27:1183-1196.
- Tiemann, J. S., Taylor, C. A., and **Knouft, J. H.** 2012. Conservation review of the Longnose Dace *Rhinichthys cataractae* (Valenciennes) in northwestern Illinois. *Transactions of the Illinois Academy of Science* 105:57-64.

- Knouft, J. H.** and Page, L. M. 2011. Climate, elevation, stream channel diversity, and geographic clines in species richness of North American freshwater fishes. *Journal of Biogeography* 38:2259–2269.
- Trumbo, D. R., Burgett, A. A., and **Knouft, J. H.** 2011. Testing climate-based species distribution models with recent field surveys of pond-breeding amphibians in eastern Missouri. *Canadian Journal of Zoology* 89:1074–1083.
- Knouft, J. H.**, Caruso, N. M., Dupre, P. J., Anderson, K. A., Trumbo, D. R., and Puccinelli, J. 2011. Using fine-scale GIS data to assess the relationship between intra-annual environmental niche variability and population density in a local stream fish assemblage. *Methods in Ecology and Evolution* 2:303-311.
- Mitchell, A. L. and **Knouft, J. H.** 2009. Non-native fishes and native species diversity in freshwater fish assemblages across the United States. *Biological Invasions* 11:1441-1450.
- Luxbacher, A. M. and **Knouft, J. H.** 2009. Assessing concurrent patterns of environmental niche and morphological evolution among species of Horned Lizards (*Phrynosoma*). *Journal of Evolutionary Biology* 22:1669-1678.
- Albert, J. S., Johnson, D. M., and **Knouft, J. H.** 2009. Fossils provide better estimates of ancestral body size than do extant taxa in fishes. *Acta Zoologica* 90(Supp1):308-335.
- Knouft, J. H.** 2009. Defense against pathogens and predators during the evolution of parental care in fishes. In: Fish defenses: pathogens, parasites, and predators. Eds. G. Zaccane, M. J. Manning, C. J. Secombes and B.G. Kapoor. Science Publishers.
- Johnson, J. R., **Knouft, J. H.**, and Semlitsch, R. D. 2007. Sex and seasonal differences in the spatial terrestrial distribution of gray treefrog (*Hyla versicolor*) populations. *Biological Conservation* 140:250-258.
- Knouft, J. H.**, Losos, J. B., Glor, R. E., and Kolbe J. J. 2006. Phylogenetic analysis of the evolution of the niche in lizards of the *Anolis sagrei* group. *Ecology* 87:S29-S38.
- Langerhans, R. B., **Knouft, J. H.**, and Losos, J. B. 2006. Shared and unique features of evolutionary diversification in Greater Antillean *Anolis* ecomorphs. *Evolution* 60:362-369.
- Taylor, C. A. and **Knouft, J. H.** 2006. Historical influences on genital morphology among sympatric crayfishes: systematics and gonopod evolution in the genus *Orconectes* (Cambaridae). *Biological Journal of the Linnean Society* 89:1-12.
- Calsbeek, R., **Knouft, J. H.**, and Smith, T. B. 2006. Variation in scale numbers is consistent with ecologically based natural selection acting within and between lizard species. *Evolutionary Ecology* 20: 377-394.

- Miller, A. J., and **Knouft, J. H.** 2006. GIS-based characterization of the ecological niches of wild and cultivated populations of the Mesoamerican fruit tree, *Spondias purpurea* (Anacardiaceae). *American Journal of Botany* 93:1757-1767.
- Brinkerhoff, R. J., Markeson, A. B., **Knouft, J. H.**, Gage, K. L., and Montenieri, J. A. 2006. Abundance patterns of two *Oropsylla* (Ceratophyllidae: Siphonaptera) species on black-tailed prairie dog (*Cynomys ludovicianus*) hosts. *Journal of Vector Ecology* 31:355-363.
- Knouft, J. H.** 2004. Latitudinal variation in the shape of the species body size distribution: an analysis using freshwater fishes. *Oecologia* 139:408-417.
- Knouft, J. H.** and Page, L. M. 2004. Nest defense against predators by the male Fringed Darter (*Etheostoma crossopterum*). *Copeia* 2004:915-918.
- Knouft, J. H.** and Page, L. M. 2003. The evolution of body size in extant groups of North American freshwater fishes: speciation, size distributions, and Cope's rule. *The American Naturalist* 161:413-421.
- Knouft, J. H.** 2003. Convergence, divergence, and the effect of congeners on body size ratios in stream fishes. *Evolution* 57:2374-2382.
- Knouft, J. H.**, Page, L. M., and Plewa, M. J. 2003. Antimicrobial egg cleaning by the fringed darter (Perciformes: Percidae: *Etheostoma crossopterum*): implications of a novel component of parental care in fishes. *Proceedings of the Royal Society of London: Biological Sciences* 270:2405-2411.
- Knouft, J. H.** 2002. Regional analysis of body size and population density in stream fish assemblages: testing predictions of the energetic equivalence rule. *Canadian Journal of Fisheries and Aquatic Sciences* 59:1350-1360.
- Knouft, J. H.** and Spotila, J. R. 2002. Assessment of movements of resident stream brown trout (*Salmo trutta*) among contiguous sections of stream. *Ecology of Freshwater Fish* 11:85-92.
- Hardman, M., Page, L. M., Sabaj, M. H., Armbruster, J. W., and **Knouft, J. H.** 2002. A comparison of fish surveys made in 1908 and 1998 of the Potaro, Essequibo, Demerara, and coastal river drainages of Guyana. *Ichthyological Explorations of Freshwater* 13:225-238.
- Taylor, C. A., **Knouft, J. H.**, and Hiland, T. 2001. Consequences of stream impoundment on fish communities in a small North American drainage. *Regulated Rivers: Research and Management* 17:687-698.
- Page, L. M. and **Knouft, J. H.** 2000. Variation in egg-mimic size in the Guardian Darter, *Etheostoma oophylax* (Percidae). *Copeia* 2000:782-785.

Armbruster, J. W., Sabaj, M. H., Hardman, M., Page, L. M., and **Knouft, J. H.** 2000. The catfish genus *Corymbophanes* (Loricariidae: Hypostominae) with description of one new species: *Corymbophanes kaiei*. *Copeia* 2000:997-1006.

Book Reviews

Knouft, J. H. 2012. *Inland Fisheries Management in North America, 3rd Edition* - W.A. Hubert and M.C. Quist, eds. [Book Review]. *Quarterly Review of Biology* 87:168-169.

Knouft, J. H. and Page, L. M. 1999. *Collection Building in Ichthyology and Herpetology* - T.W. Pietsch and W.D. Anderson, Jr., eds. [Book Review]. *Collection Forum* 13:93-94.

EXTERNAL FUNDING

2021 - 24 REU Site: Wetland science in the modern world. **National Science Foundation, \$300,757** (Co-PI with Tony Dell (PI), National Great Rivers Research and Education Center).

2020 - 21 Characterizing Great Lakes Atlantic salmon microbiome and virome. **Cooperative Institute for Great Lakes Research, \$9,000** (with Fangqiong Ling, Washington University in St. Louis, Kevin Kapuscinski and Ashley Moerke, Lake Superior State University).

2017 - 21 Collaborative Research: Improving high performance super computer aquatic ecosystem models with the integration of real-time citizen science data. **National Science Foundation, \$510,282** (Co-PI with Darren Ficklin (PI), Indiana University, Chris Lowry (PI), University of Buffalo, Damon Hall (Co-PI), Saint Louis University).

2016 - 21 Collaborative Research: HydroClim: Empowering aquatic research in North America with data from high-resolution streamflow and water temperature GIS modeling. **National Science Foundation, \$1,630,619** (PI with Darren Ficklin (PI), Indiana University and Hank Bart (PI), Tulane University).

2016 - 20 Non-market value of watershed management enhancements: An integration of hydro-ecologic and economic assessments. **USDA-NIFA, \$499,534** (Co-PI with Maria Chu (PI) and Amy Ando (Co-PI), University of Illinois).

2019 - 20 Genomic investigation of gut microbiome associations in freshwater fish assemblages. **Living Earth Collaborative, \$21,450** (with Fangqiong Ling, Washington University in St. Louis).

2018 - 19 Developing the Bluntnose minnow (*Pimephales notatus*) as a model for studying genomic responses of freshwater species to urban environments. **Living Earth Collaborative, \$29,777** (with Wes Warren, Washington University in St. Louis).

2016 - 2019 Predicting impacts of land use and climate change on the hydrology and aquatic habitat in the Meramec River Basin. **The Nature Conservancy, \$199,981** (PI with Wasit Wulamu (Co-PI), SLU and Maria Chu (Co-PI), University of Illinois).

2016 - 18 Evaluation of brining as a chloride best management practice in the St. Louis Region. **Environmental Protection Agency Urban Waters Program. \$58,793** (PI).

2015 - 17 Integrating climate data with hydrologic and ecological niche models to predict impacts of climate change for threatened and endangered species in the Mobile River Basin. **U.S. Army Corps of Engineers, \$272,314** (with Darren Ficklin, Indiana University and Damon Hall, Saint Louis University).

- 2014 - 15 Dissertation Research: Accounting for spatial autocorrelation in species distribution models using a Bayesian framework: consequences for predictions across space and time. **National Science Foundation, \$19,621** (with Melissa Anthony (Co-PI)).
- 2013 - 15 Dissertation Research: Hydrological characteristics, trophic interactions, and fish assemblage structure in temperate stream systems. **National Science Foundation, \$19,419.** (with Sophia Niu (Co-PI)).
- 2009 - 14 CAREER: Development of GIS applications for the study of aquatic biodiversity: assessing environmental factors regulating fish assemblages across multiple scales. (PI) **National Science Foundation Career Award, \$584,951.**
- 2009 - 12 Combining climate model predictions, hydrological modeling, and ecological niche modeling algorithms to predict the impacts of climate change on aquatic biodiversity. (PI) **Environmental Protection Agency, Science To Achieve Results (STAR) - Consequences of Global Change for Water Quality program. \$246,149.**
- 2008 - 11 Assessing and reducing the threat of flood disasters and ecosystem destruction along the Missouri and Mississippi Rivers using satellite data, flow measurements and climate models. **Kemper-Stupp Foundation, \$250,000** (Co-PI with Tim Kusky (PI), William Dannevik, Zaitao Pan, Wasit Wulamu (Co-PIs)).
- 2008 - Status, distribution, and resource requirements of the Longnose Dace in Illinois. **Illinois Department of Natural Resources, \$6,464** (with Chris Taylor and Jeremy Tiemann).
- 2005 - 06 Island-Net (Phase I): a web accessible database for the integration and study of global taxonomic and environmental data on islands. (PI) **National Science Foundation, \$50,000.**
- 2002 - 05 Role of large woody debris in restoring stream ecosystem function in managed U.S. forests. **USDA - NRI, \$375,000** (Co-PI with Jen Tank (PI) and Gary Lamberti).
- 2002 - 04 Macroecological patterns in a model taxonomic group: integration of ecological, phylogenetic, and historical data from Caribbean *Anolis* lizards. **Postdoctoral Fellowship in Biological Informatics, National Science Foundation, \$100,000.**
- 2000 - 01 Factors influencing evolutionary and ecological patterns of body size in North American freshwater fishes. **Doctoral Dissertation Improvement Grant, National Science Foundation, \$5,439.**
- 1998 Fishes of the Essequibo River, Guyana, 90 years after Eigenmann's expedition. **National Geographic Society, \$24,650** (with Lawrence Page, Mark Sabaj, and Jonathan Armbruster).
- 1994 The effects of urbanization and pollution on the home range and movements of Brown Trout in Valley Creek, Valley Forge, Pennsylvania. **Trout Unlimited, \$2,000.**

INTERNAL FUNDING

- 2011 - 13 Impacts of climate and land use changes on flooding in urbanized human and natural systems. Saint Louis University STEM-Plus Award, \$117,271 (PI with Joanna Ganning, Wasit Wulamu, and Zaitao Pan (Co-PIs)).
- 2010 - 11 Climate and local adaptation to temperature and flow regimes in the Bluntnose Minnow. President's Research Fund, Saint Louis University. \$24,165.
- 2010 - 11 Assessing the impact of climate on freshwater fish: relationships between annual temperature, stream flow, and species traits in the Johnny Darter (*Etheostoma nigrum*). Beaumont Award, Saint Louis University. \$4,983.

- 2005 - Chemical adaptations in fishes during freshwater invasions: an evolutionary perspective. University of Colorado Junior Faculty Development Award, \$5,000.
- 2000 Local community patterns in body size of North American stream fishes. University of Illinois Graduate College Dissertation Travel Grant, \$4,888; Clark Research Grant, University of Illinois, \$981.

POSTDOCTORAL RESEARCHERS SUPERVISED

- Dr. Ali Hassan Shabbir, 2022 – current
 Dr. Kara Andres, 2022 - current
 Dr. Binbin Wang, 2021 – current
 Dr. Alejandra Botero Acosta, 2018 – current
 Dr. Chin-Lung Wu, 2016 – 2021
 Dr. Nima Ehsani, 2016 – 2018
 Dr. Laura Catano, 2015 – 2016
 Dr. Maria Chu, 2012 – 2014
 Dr. Huicheng Chien, 2010 – 2013
 Dr. Matt Michel, 2009 – 2013

GRADUATE STUDENTS SUPERVISED

Saint Louis University

- Kiana Lindblad, 2021 – current
 Alison Breakfield, 2021 – current
 Diella Packman, M.S., 2019 – 2021
 Danelle Haake, Ph.D., 2015 – 2020
 Megan Pagliaro, M.S., 2017 – 2019
 Melissa Anthony, Ph.D., 2011 – 2017
 Kara Andres, M.S., 2015 – 2017
 Kevin Krause, M.S., 2015 – 2017
 Sophia Niu, Ph.D., 2010 – 2015
 Collin Beachum, Ph.D., 2009 - 2014;
 Daryl Trumbo, M.S., 2007 – 2009

University Colorado

- Amy Schneider, 2005 - 2007, M.S.
 Alison Mitchell, 2005 - 2007, M.S.

TEACHING EXPERIENCE

Lecturer

Saint Louis University

- 2019 Aquatic Ecology
 2016 Python for GIS
 2015 Programming in R for Ecology (graduate)
 2015, 2016, 2021 Evolutionary Biology (undergraduate)
 2012, 2015, 2019 Advanced Ecology (graduate)
 2011, 2013 Biogeography (undergraduate and graduate)
 2011, 2012, 2013 Intermediate GIS (undergraduate and graduate)
 2008, 2009, 2010 Principles of Biology II (undergraduate)

- 2009 Current Topics in Ecology and Evolution (graduate)
 2006 - 2022 (annually) GIS in Biology (undergraduate and graduate)
University of Colorado
 2005 Biogeography (graduate), Evolution, Science, and Society (graduate)
University of Notre Dame
 2002 Ecology in the 21st Century: Crisis and Challenge (undergraduate)

WORKSHOPS ORGANIZED

- 2019 GIS Applications in Aquatic Ecology and Evolutionary Biology, Saint Louis University
 (July 31 – August 2)
 2018 GIS Applications in Aquatic Ecology and Evolutionary Biology, Saint Louis University
 (June 13-15)
 2017 GIS Applications in Aquatic Ecology and Evolutionary Biology, Saint Louis University
 (June 14-16)
 2016 GIS Applications in Aquatic Ecology and Evolutionary Biology, Saint Louis University
 (August 17-19)
 2013 GIS Applications in Aquatic Ecology and Evolutionary Biology, Saint Louis University
 (June 12-14)
 2012 GIS Applications in Aquatic Ecology and Evolutionary Biology, Saint Louis University
 (June 20-22)
 2011 GIS Applications in Aquatic Ecology and Evolutionary Biology, Saint Louis University
 (June 22-24 and August 17-19)
 2010 GIS Applications in Aquatic Ecology and Evolutionary Biology, Saint Louis University
 (June 16-18 and August 11-13)
 2007 GIS Applications in Ecology and Evolutionary Biology. Washington University in St.
 Louis
 2000 American Fisheries Society Meeting, Illinois Chapter, Mt. Vernon, Illinois
 “Identification and Ecology of Species of Illinois Darters and Madtoms”
 1999 North American Native Fishes Association Annual Meeting, Champaign, Illinois
 “Identification of North American Freshwater Fishes”

GRANT PROPOSAL REVIEWS

National Science Foundation, National Climate Center, U.S. Civilian Research and
 Development Foundation, United States-Israel Binational Science Foundation, United States
 Geological Survey, American Philosophical Society

INVITED REVIEW PANELS

- 2023 NSF AccelNet Panel
 2017 NSF EarthCube Panel
 2014 NSF Cyber SEES Panel
 2012 NSF Advances in Biological Informatics Panel
 2012 NSF Software Infrastructure for Sustained Innovation Panel
 2010 NSF Population and Community Ecology Panel
 2009 NSF Population and Community Ecology Panel/Ecosystem Studies Joint CAREER
 Award Proposal Review Panel
 2009 NSF Dissertation Improvement Grant Proposal Review Panel

- 2008 NSF Cyber-Enabled Discovery and Innovation Pre-proposal Review Panel
- 2008 NSF Cyber-Enabled Discovery and Innovation Full Proposal Review Panel

AWARDS

- 2013 Finalist for College of Arts and Sciences Excellence in Graduate Mentoring Award
- 2009 Saint Louis University Award for Excellence in Research, Saint Louis University
- 2004 Invited member of NSF-sponsored Ecological Informatics Training Workshop - Science Environment for Ecological Knowledge (SEEK). January, Albuquerque, New Mexico.
- 2003 Visiting Scholar, University of California at Berkeley, Museum of Vertebrate Zoology
- 1999 Ranked as excellent (top 10%) by students among teaching assistants at the University of Illinois. Ichthyology.

SERVICE

- 2017 – 19 National Socio-Environmental Synthesis Center (SESYNC) Scientific Review Committee Member
- 2015 – 17 National Science Foundation appointed iDigBio External Advisory Board member
- 2015 – 17 Director, Center for Sustainability
- 2014 – 15 Associate Director, Center for Environmental Sciences; Advisory Board, Center for Sustainability
- 2013 – 14 Associate Director, Center for Environmental Sciences; Advisory Board, Center for Sustainability
- 2012 – 13 Associate Director, Center for Environmental Sciences; Faculty Search Committee (Chair), Center for Sustainability; Ad hoc Research Misconduct Inquiry Committee
- 2011 – 12 Associate Director, Center for Environmental Sciences; Animal Care IACUC Committee; College of Arts and Sciences Nominations Committee; Ecology, Evolution, and Systematics Section (Chair); Reis Biological Station Committee
- 2010 – 11 Animal Care IACUC Committee; College of Arts and Sciences Nominations Committee; Ecology, Evolution, and Systematics Section (Chair); Reis Biological Station Committee
- 2009 – 10 Ecology, Evolution, and Systematics Section (Chair); Departmental Financial Advisory Committee; Reis Biological Station Committee; Department of Biology Faculty Search Committee
- 2008 – 09 Ecology, Evolution, and Systematics Section (Chair); Departmental Financial Advisory Committee; Reis Biological Station Committee
- 2007 – 08 Graduate Committee; Departmental Financial Advisory Committee; Reis Biological Station Committee
- 2007 Organization committee member for 2007 Annual Meeting of the American Society of Ichthyologists and Herpetologists in St. Louis
- 2006 – 07 Graduate Committee; Reis Biological Station Committee
- 2005 – 06 Departmental Executive Committee; Graduate Committee; Annual Merit Evaluation Committee; Curriculum Committee
- 2004 – 05 Museum Project Committee; Museum Collections Committee; Annual Report and Technology Committee; Zoology Collection Manager Search (Co-Chair)

INVITED PRESENTATIONS

- 2023 Washington University in St. Louis, Missouri MOST Climate Security Panel

- 2022 National Academies of Sciences, Engineering, and Medicine, GeoResolution Conference – Water Tension and Conflict Panel, Gateway Green Alliance
- 2021 Queens College, George Washington University
- 2020 University of Tennessee
- 2019 University of Missouri-St. Louis, Cornell University, Illinois Natural History Survey
- 2018 University of Missouri, Washington University in St. Louis, Missouri Botanical Garden Systematics Symposium
- 2017 Indiana University, Wayne State University
- 2015 Rensselaer Polytechnic Institute, University of Florida, Southern Illinois University – Edwardsville, Lindenwood University
- 2014 University of Florida, Washington University in St. Louis (2)
- 2013 Florida Museum of Natural History, University of Minnesota-Duluth, Missouri University of Science and Technology, American Geophysical Union Fall Meeting
- 2012 University of Toronto, Southern Illinois University (Edwardsville), Southwestern Illinois College, University of Illinois (Urbana-Champaign), Ball State University, Missouri State University
- 2011 Arkansas State University
- 2010 Missouri University of Science and Technology
- 2008 Meeting of the Society for the Study of Evolution (member of symposium)
- 2007 National Science Foundation, New York Botanical Garden, Meeting of the Association for Tropical Biology and Conservation (member of symposium)
- 2006 Purdue University, Saint Louis University, University of Wisconsin, Eau-Claire, Washington University in St. Louis, University of Missouri-St. Louis, Lindenwood University
- 2004 University of Manitoba, University of Colorado, Fordham University
- 2003 Queens College
- 2002 University of Kansas, Grand Valley State University
- 2001 Murray State University

PRESENTATIONS AT PROFESSIONAL MEETINGS

- 2018 • Society for Freshwater Science Annual Meeting. Detroit, Michigan (3 oral presentations)
- Annual Meeting of the US Regional Association of the International Association for Landscape Ecology. Chicago, Illinois (1 oral presentation)
- 2017 • HydroEco 2017. Birmingham, England (1 oral presentation)
- Digital Data in Biodiversity Research Conference. Ann Arbor, Michigan (1 oral presentation)
 - Meeting of the American Geophysical Union. New Orleans, Louisiana. (3 oral presentations, 3 poster presentation)
- 2016 • Annual Meeting of the American Fisheries Society. Kansas City, Missouri. (1 invited oral presentation)
- 2015 • Annual Meeting of the Ecological Society of America. Baltimore, Maryland. (1 oral presentation)
- Meeting of the American Geophysical Union. San Francisco, California. (Chair of organized session, 1 poster presentation)

- 2014 • Sixth International Symposium on GIS and Spatial Analyses in Fishery and Aquatic Sciences. Tampa, Florida. (1 oral presentation)
- Society of Freshwater Science Annual Meeting. Portland, Oregon. (1 oral presentation)
- Missouri Natural Resources Conference. Osage Beach, Missouri. (1 oral presentation)
- Meeting of the American Geophysical Union. San Francisco, California. (Chair of organized session, 2 poster presentation)
- 2013 • Annual Meeting of the Ecological Society of America. Minneapolis, Minnesota. (4 oral presentations)
- Meeting of the American Geophysical Union. San Francisco, California. (1 oral presentation, 1 poster presentation)
- 2012 • Annual Meeting of the Society for Freshwater Science. Louisville, Kentucky. (1 poster presentation)
- Society for Mathematical Biology Annual Meeting. Knoxville, Tennessee (1 oral presentation, 1 poster presentation)
- Meeting of the American Geophysical Union. San Francisco, California. (1 oral presentation, 1 poster presentation)
- Annual Meeting of the American Fisheries Society. Minneapolis, Minnesota. (1 oral presentation)
- Annual Meeting of the Botanical Society of America. Columbus, Ohio. (1 oral presentation)
- 2011 • Meeting of the American Society of Ichthyologists and Herpetologists. Minneapolis, Minnesota. (2 oral presentations)
- Annual Meeting of the Ecological Society of America. Austin, Texas. (2 oral presentations)
- Meeting of the American Geophysical Union. San Francisco, California. (1 poster presentation)
- EPA Annual STAR Project Meeting, Washington, DC. (1 oral presentation)
- 2010 • Meeting of the American Society of Ichthyologists and Herpetologists. Providence, Rhode Island. (3 oral presentations)
- Meeting of the American Geophysical Union. San Francisco, California. (1 poster presentation)
- 2009 • American Fisheries Society Meeting. Nashville, Tennessee. (1 oral presentation)
- Meeting of the American Society of Ichthyologists and Herpetologists. Portland, Oregon. (1 oral presentation)
- 2008 • Meeting of the Society for the Study of Evolution, the Society of Systematic Biologists, and the American Society of Naturalists. Minneapolis, Minnesota. (1 oral presentation)
- Meeting of the American Society of Ichthyologists and Herpetologists. Montreal, Canada. (1 oral presentation, 1 poster presentation)
- Flood Forum: Finding the balance between floods, flood protection, and river navigation. St. Louis, Missouri. (1 oral presentation)
- 2007 • Meeting of the Association for Tropical Biology and Conservation. Morelia, Mexico. (2 oral presentations)
- Meeting of the American Society of Ichthyologists and Herpetologists. St. Louis, Missouri. (2 oral presentations)

- Midwest Ecology and Evolution Conference. Kent, Ohio. (1 poster presentation)
- 2006 • Meeting of the American Society of Ichthyologists and Herpetologists. Tampa, Florida. (2 oral presentations)
- 2005 • Joint Meeting of the Society for the Study of Evolution, the Society of Systematic Biologists, and the American Society of Naturalists. Fairbanks, Alaska. (1 oral presentation)
- 2004 • Meeting of the American Society of Ichthyologists and Herpetologists. Norman, Oklahoma. (2 oral presentations)
- 15th Symposium of the International Association of Astacology. London, England. (1 oral presentation)
- 2003 • Greater Everglades Ecosystem Restoration Conference. Tampa, Florida. (1 oral presentation)
- Joint Meeting of the Society for the Study of Evolution, the Society of Systematic Biologists, and the American Society of Naturalists. Chico, California. (1 oral presentation)
- 2002 • Meeting of the North American Benthological Society. Pittsburgh, Pennsylvania. (1 oral presentation)
- Meeting of the American Society of Ichthyologists and Herpetologists. Kansas City, Missouri. (1 oral presentation)
- 2001 • Meeting of the North American Benthological Society. La Crosse, Wisconsin. (1 oral presentation)
- Joint Meeting of the Society for the Study of Evolution, the Society of Systematic Biologists, and the American Society of Naturalists. Knoxville, Tennessee. (1 oral presentation)
- 2000 • Ethology and Evolutionary Ecology of Fishes and Darterfest. Athens, Georgia. (2 oral presentations)
- Meeting of the American Society of Ichthyologists and Herpetologists. La Paz, Mexico. (1 oral presentation)
- 1999 • Joint Meeting of the Society for the Study of Evolution, the Society of Systematic Biologists, and the American Society of Naturalists. Madison, Wisconsin. (1 oral presentation)