

Todd Swannack, Ph.D.

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Dr. Todd Swannack is the team lead for the Integrated Ecological Modeling Team at the US Army Engineer Research and Development Center (ERDC). He develops quantitative ecological models to evaluate impacts and benefits of civil works and military projects on ecological communities. Todd and his team develop models for endangered species, invasive species, landscape changes, thin layer placement, and other engineering with nature projects. His team's work with invasive Zebra Mussels, funded principally by the Aquatic Nuisance Species Research Program (ANSRP), included developing an integrated, spatially-explicit simulation model that can simulate how human-mediated transport impacts the population dynamics and dispersal of the species. Todd received his B.A. in Biology from Texas A&M (1995), his M.S. from Texas State University (2000), and his Ph.D. from Texas A&M (2007).



The integrated ecological modeling team on the St. Croix River. Pictured from left to right, Drs. Candice Piercy, Michael Kjelland, and Todd Swannack.

Michael E. Kjelland, Ph.D.

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Dr. Michael Kjelland has a diverse experience portfolio having worked over the past several years in Academia, Industry, and Government in such roles as: an Assistant Professor of Biology (Jamestown College) and Interim Professor of Biology (Wayne State College), a Research Scientist at Sexing Technologies (Biotechnology) and Conservation, Genetics & Biotech, LLC, and a Research Ecologist at ERDC-USACE. Michael has more than 15 years of experience as an ecosystem scientist focusing on the development, evaluation and application of large-scale, spatially explicit, ecosystem simulation models to address applied ecological/environmental questions, with an emphasis on modeling the interactions among species and their environment and determining how differing policy scenarios affect those dynamics. Michael's research focus at ERDC involves the incorporation of system dynamics, specifically, involving ecological modeling and population dynamics. Currently, Michael and colleagues are developing spatially explicit, agent based models implementing pattern oriented modeling and inverse modeling techniques to estimate parameter values where there are instances of moderate to high levels of uncertainty.

S. Kyle McKay, Ph.D., P.E.

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Dr. Kyle McKay is a research civil engineer with the U.S. Army Engineer Research and Development Center (ERDC) Environmental Laboratory (EL). He received a B.S. in Environmental Engineering from Colorado State University, an M.S. in Civil Engineering from University of Illinois Urbana-Champaign, and a Ph.D. at the University of Georgia's Odum School of Ecology. His research focuses broadly on examining ecological effects of water resources infrastructure with applications related to stream and watershed restoration, fish passage improvement, environmental flow management, and sustainability policy. He is stationed in New York City to facilitate cooperative research between the ERDC, the US Army Corps of Engineers New York District, and other local partners.

