

## CALL FOR ABSTRACTS

### 2022 Workshop

#### THE FRESHWATER MOLLUSK CONSERVATION SOCIETY

#### Henry Horton State Park- Duck River, Tennessee August 8-11

The 2022 Workshop Planning Committee WANTS YOU!

***Example abstract from a previous symposium:***

**ASSESSING THE HAZARDS OF CURRENT USE PESTICIDES TO EARLY LIFE STAGES OF NATIVE FRESHWATER MUSSELS.** Robert B. Bringolf<sup>1</sup>, LeRoy F. Humphries<sup>2</sup>, Peter R. Lazaro<sup>1</sup>, Chris Eads<sup>2</sup>, Chris Barnhart<sup>3</sup>, Damian Shea<sup>1</sup>, Jay F. Levine<sup>2</sup>, and W. Gregory Cope<sup>1</sup>. <sup>1</sup>Department of Environmental and Molecular Toxicology, North Carolina State University, Raleigh, NC 27695; <sup>2</sup>College of Veterinary Medicine, North Carolina State University, Raleigh, NC 27606; <sup>3</sup>Department of Biology, Missouri State University, Springfield, MO 65804.

Native freshwater mussels (family Unionidae) are among the most imperiled faunal groups in North America. Approximately 67% of the nearly 300 freshwater mussel species are considered vulnerable to extinction or already extinct. North Carolina has historically supported 56 species of mussels; however, 82% of those species are currently listed as endangered, threatened, or of special concern by the U.S. Fish and Wildlife Service and the State of North Carolina. Although numerous stressors have been implicated in the decline of freshwater mussels, the effects of pesticides on native mussels is largely unknown. Timing of pesticide application combined with the unique life history and reproductive strategy of mussels makes them susceptible to pesticide exposure. The objective of this study was to determine the hazards of pesticides to early life stages of freshwater mussels. We performed acute toxicity tests with glochidia (7 species) and juveniles (6 species) exposed to a suite of current use pesticides (atrazine, fipronil, pendimethalin, and permethrin) and a reference toxicant (NaCl). Our results indicate that these pesticides, at concentrations approaching water solubility, were not acutely toxic to the species of glochidia and juveniles tested. However, in a 21-d chronic toxicity test performed with 4-month old juvenile *Lampsilis siliquoidea* exposed to atrazine, the 14-d atrazine LC50 was 15.8 mg/L (95% confidence interval 12.0-19.5) and the 21-d atrazine LC50 was 4.3 mg/L (95% confidence interval 2.8-5.8). Effects on growth and genotoxicity (single-strand DNA breaks) were also determined in the chronic test. Our results indicate that the relative risk associated with acute exposure of early life stages of mussels to the current use pesticides tested singly is likely low; however, survival and genotoxicity results indicate that chronic exposure of juvenile mussels to atrazine may be impacting mussel populations and warrants further investigation, as does the assessment of pesticide mixtures.