

## DETERMINING CLEARANCE RATES OF NATIVE JUVENILE *LAMPSILIS FASCIOLA* AND INVASIVE *CORBICULA FLUMINEA* AT DIFFERING ALGAL CONCENTRATIONS

Authors: Tayton Alvis<sup>1,2</sup>, Taylor E. Kelley<sup>1</sup>, Jonathan W. Lopez<sup>1</sup>, Carla L. Atkinson<sup>1</sup>

<sup>1</sup>Department of Biological Sciences and Center for Freshwater Studies, University of Alabama, Tuscaloosa, AL, 35487, U.S.A.

<sup>2</sup>Environment, Ecology, and Energy Program, University of North Carolina at Chapel Hill, Chapel Hill, NC, 27514

Tayton Alvis

Freshwater mussels (Unionidae) are a diverse guild of long-lived, filter-feeding benthic bivalves, and are among the most globally threatened group of animals. The invasive bivalve species *Corbicula fluminea* (hereafter *Corbicula*) co-occurs with native mussels in many waterways, and has the potential to overlap in feeding and potentially out-compete native species. While native mussels and *Corbicula* have similar functional roles as filter-feeders, previous research has found mixed results regarding how *Corbicula* influence adult mussels. However, little work to date has been conducted to discern their impact on more sensitive and fast-growing juvenile freshwater mussels. To better understand potential interactions between *Corbicula* and a common juvenile mussel species, *Lampsilis fasciola*, we conducted clearance rate experiments at two algal concentrations (low and high algae availability). Algal concentrations were found to significantly differ between the control group and both *L. fasciola* and *C. fluminea* treatment groups within the high food treatment. Mass-specific clearance rates were not significantly different between species, but were significant between algal treatment groups. Our work highlights potential competitive interactions between *C. fluminea* and juvenile *L. fasciola*, and demonstrates the potential positive relationship between bivalve clearance rate and food availability. Additionally, it provides insight into the potential vulnerabilities of juvenile mussels when in the presence of high densities of invasive *C. fluminea*. More attention should be focused on the functional roles invasive species play in aquatic ecosystems to better understand the implications of their introduction.