EFFECTS OF MASS MORTALITY OF AN ABUNDANT INVASIVE SPECIES ON ECOSYSTEM FUNCTION

Bill McDowell, James E. Byers, Amy Rosemond, and William H. McDowell

AUTHORS: University of Georgia – Ecology, Athens, Georgia 30602
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Abstract. Freshwater burrowing bivalves have been identified as important ecosystem engineers, and invasive bivalves can transform aquatic ecosystems, through filtration, sedimentation, nutrient uptake, and nutrient excretion. However, these impacts all focus on impacts of living individuals, without addressing effects invasive species may have through death. As an extremely abundant and widespread species, the invasive clam Corbicula fluminea has the potential to dramatically alter ecosystem function in Georgia Piedmont rivers. Compared to native mussels, Corbicula also dies easily under stressful conditions, potentially creating unique pulses of nutrients in these systems that may impair water quality and remove dissolved oxygen, as well as release a large amount of ammonia, which is toxic to native Unionid mussels. To examine the impacts of mass mortality events I examined the effects of a naturally occurring mass mortality event in the Broad River, Georgia, on Corbicula population size and water quality. I also conducted a mesocosm experiment in artificial pools where I placed dead Corbicula in a small, artificially created pool placed in a natural stream channel. Temperature, dissolved oxygen, and a suite of water quality variables (total dissolved nitrogen, total dissolved phosphorus, nitrate/nitrite, soluble reactive phosphorus, ammonium, and dissolved organic carbon) were tracked for one week. Dissolved oxygen was lower in Corbicula pools than in controls, and in some cases reached hypoxic levels (<2 mg/L), which could stress other fauna. Water quality results are pending analysis.