

**MS Thesis**  
**Department of Environmental Science and Policy**  
**College of Science**  
**George Mason University**

**Candidate:** Seanessy Lyons

**Defense Date and Time:** November 15, 2023

**Defense Location:** Johnson Center, 326, Meeting Room B & Virtual

**Title:** Optimizing threatened wood turtle (*Glyptemys insculpta*) environmental DNA surveillance with experimental control standardization

**Thesis Director:** Dr. Cody Edwards

**Committee:** Dr. Jesus Maldonado, Dr. Tom Akre, Dr. David Luther

**ABSTRACT**

Environmental DNA has proven to be a valuable tool in rapid species detection. As a rapidly growing field, standardized practices have not been completely established and comparisons between methodologies have not been rigorously undertaken. The wood turtle (*Glyptemys insculpta*) is currently facing declines across their range with poorly understood populations and false positive amplifications in experimental controls during eDNA surveillance efforts. The development of a new sampling protocol has led to a reduction in false positives in controls showcasing the importance of standard eDNA practices concerning control usage at every stage of sampling.