

The Effect of Salinity on Lithium Isotope and Element Ratios in the Eastern Oyster, *Crassostrea virginica*

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The eastern oyster, *Crassostrea virginica*, incorporates trace amounts of lithium (Li) in its calcium carbonate (CaCO_3) shell, allowing for measurement of Li isotopes and element (e.g., Li/Mg) ratios in oyster shells to understand paleo-seawater compositions and environmental conditions (e.g., silicate weathering congruency and rates, growth temperature). However, if confounding factors such as salinity correlate with preferential biological uptake of certain elements and isotopes from the surrounding seawater, then the composition of the shell may no longer serve as a faithful archive of the targeted paleo-environmental conditions. While the relationship between salinity and Li isotope and element ratios has been determined in other shell-forming invertebrates, it has not been investigated in oysters. Here we measure several isotope and element ratios in oyster shells collected from eight locations of various salinities to determine the confounding effect of salinity on Li-based proxies in oysters. We collected 50 oysters from eight sites along the Newport River estuary in coastal North Carolina, with salinities ranging from 12.2 ppt to 29.8 ppt. We will present Li/Ca, Mg/Ca, $\delta^{7}\text{Li}$, $\delta^{18}\text{O}$, and $\delta^{13}\text{C}$ data from oyster shell samples as well as in estuarine water samples collected from each site. Comparing the shell values and water values at each site, we will then consider the effect of salinity on geochemical ratios in oyster shells. This will inform our ability to use fossil oyster shells in proxy-based reconstructions of Earth's past climate and weathering patterns.