

## **Paleoclimate reconstruction of the Gulf of Maine during the recent Holocene (past 5000 years) using Archaeological Mollusk Shells**

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The paleoclimate of the Gulf of Maine (GOM) during the recent Holocene can be examined through archaeological shell middens in Maine (Turner Farm) and on Nantucket Island, MA. We aim to reconstruct the ocean conditions across the Holocene occupation at these sites (~ 5000 years) using the trace element chemistry of Soft-shell and Hard-shell clams (*Mya arenaria* and *Mercenaria mercenaria*) and Eastern oyster (*Crassostrea virginica*). The location of each site is at the extreme north and south of the GOM; providing samples from two sites throughout the Holocene. We analyzed trace element composition along the growth axis using laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS). Trace element composition was used to reconstruct trophic structure, pH, salinity, and temperature. In future studies we will ground-truth temperature, salinity, and pH proxy data with modern conspecific specimens reared under controlled conditions.

Paleoenvironmental reconstruction and the study of events associated with human-environment interactions can shape our understanding of future climate change. This research helps further our understanding of long term trends in shellfish population distributions and the interactions between humans and natural resources. Given the significant economic value of marine bivalve species, understanding the longer term trends in shellfish population distributions and the environment will provide much needed data for the management of these species in future scenarios.