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## LSU DOCTORAL DISSERTATIONS

### Human-Environment Interactions: Sea-Level Rise and Marine Resource Use at Eleanor Betty, an Underwater Maya Salt Work, Belize

[Valerie Renae Feathers](#), [Louisiana State University and Agricultural and Mechanical College](#)

#### Degree

Doctor of Philosophy (PhD)

#### Department

Geography and Anthropology

#### Document Type

Dissertation

#### Abstract

Dissertation excavations were performed in the spring of 2013 at the underwater site of Eleanor Betty in Paynes Creek National Park, Belize. The marine environment preserved wooden architecture associated with the salt works. Excavation goals included: 1) excavating and defining the boundaries of the submerged shell midden; 2) collecting sediment samples for paleoenvironmental analyses; and 3) recovering cultural remains to determine the site's purpose (residence versus production workshop).

Four transects were added to the existing transect from excavations performed during the 2011 field season. The shell midden measured 5 meters in length (north-to-south throughout all transects) by 0.5-to-1 meters in width (east-to-west across all transects).

Sediment samples were subjected to loss-on ignition (the burning of sediment to determine the percent of organic matter present) and microscopic identification of sediment to identify the type of organic matter present. Analyses revealed a high organic content coupled with an abundance of *Rhizophora mangle* (fine red mangrove roots), which keep pace with sea-level rise and fall. Results indicate that Eleanor Betty was built on the cleared red mangrove stands and submerged by sea-level rise.

The shell midden was determined to be a cultural midden as charcoal and archaeological material were recovered throughout all levels of the submerged midden deposit. Approximately 4,733 pieces of shell resulted from the excavations. Of the 4,733 pieces, 3,979 fragments were identified as *Crassostrea rhizophora* (red mangrove oysters). Microscopic analyses suggest the shell were part of a meal, perhaps a feasting ritual, as evidenced by the break patterns on the shells' ventral margins. Assessment of height-length ratios for predation indicates the procurement of shells was a one-time event.

An abundance of charcoal (~16,000 grams) and briquetage (~215,000 grams) – pottery used to evaporate brine over fires to make salt, was recovered from the 2013 field excavations. No household items, such as figurine whistles or pottery used for food storage, were recovered. The excavation results indicate that Eleanor Betty was a salt production workshop.

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Sea-Level Rise and Shoreline Changes Along an Open Sandy Coast: Case Study of Gulf of Taranto, Italy. The dynamics of the sandy coast between Castellaneta and Taranto (Southern Italy) has been influenced by many natural and anthropogenic factors, resulting in significant changes in the coastal system over the last century. Rising sea level eventually forced their abandonment and sealed the remains in anaerobic conditions under a protective cover of marine sand, until recent disturbance by storms and sand-mining exposed parts of the submerged ancient land surface to archaeological discovery. [Save to Library](#). [Download](#). [Abstract](#)

The nature of Maya political institutions and state-level resource dynamics during the Late Classic period (AD 550–850) has been the subject of much discussion over the past several decades. This study uses zooarchaeology to track the acquisition and distribution of animal resources within and between political states. We assess the faunal remains excavated from three capitals (Piedras Negras, Yaxchilan, and Aguateca) in two ways. [Human-Environment Interactions: Sea-Level Rise and Marine Resource Use at Eleanor Betty, an Underwater Maya Salt Work, Belize](#). Valerie Feathers. *Geography*. 2017. [Prehispanic Maya diet and mobility at Nakum, Guatemala: A multi-isotopic approach](#). As the water levels increase, the damage caused by sea storms also penetrates inland regions with successive rise in intensity. Such water is unfit for consumption, and cannot be used for agricultural purposes. [Possible Solutions and Mitigation Measures](#). Building tall walls and similar structures might help reduce sea water intrusion up to a certain level, but this solution is of no help when the sea level rises drastically and even during tsunamis striking the coastal regions. Constructing levees might help on a small scale, especially if the particular coastal region experiences less increase in ocean water over a longer period of time.