

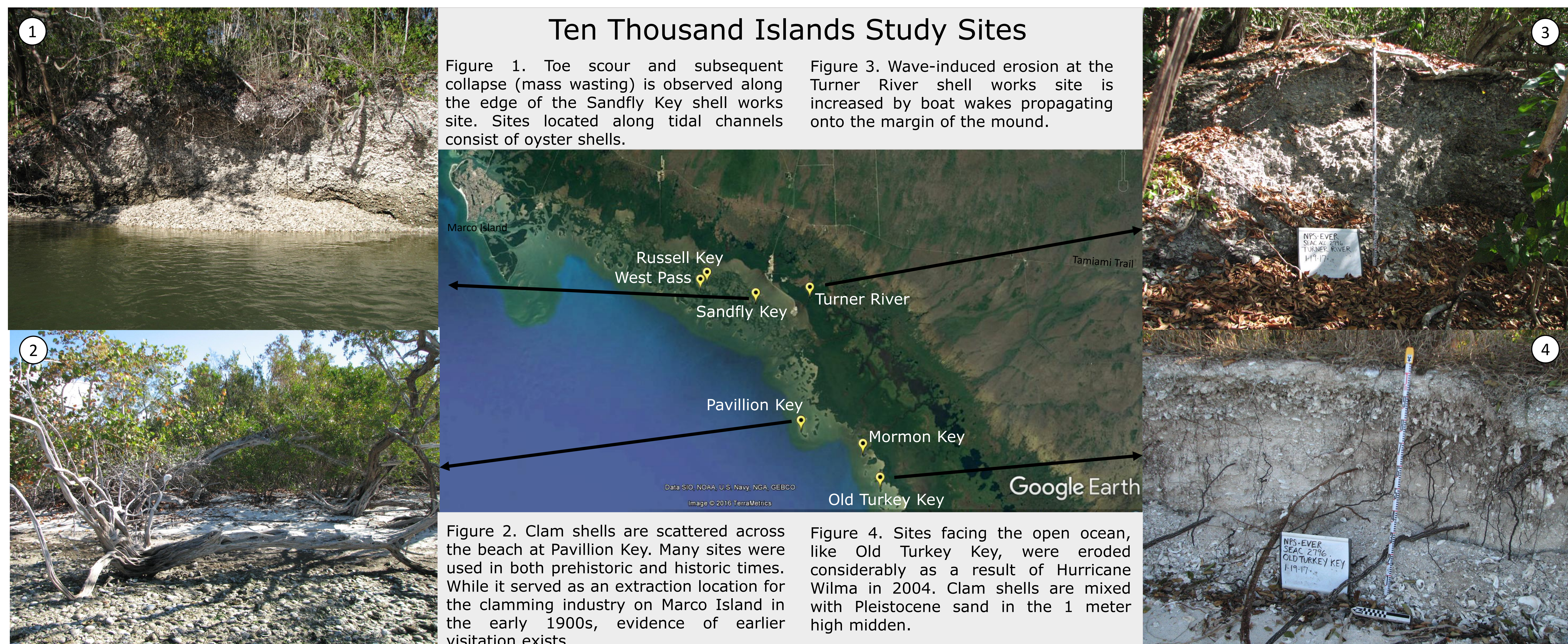
Stabilization of Everglades' cultural resource sites with integrated ecosystem restoration

Danielle E. Ogurcak¹, Randall W. Parkinson¹, Todd A. Crowl^{1,2}, and Margo Schwadron³

¹ Florida International University, Institute of Water and Environment, Miami, FL, USA; ² Florida International University, Sea Level Solutions Center, Miami, FL, USA; ³ National Park Service, Southeast Archeological Center, Tallahassee FL, USA

Abstract

Cultural resource sites are found throughout the greater Everglades' ecosystem in a variety of environmental settings. In the Ten Thousand Islands (TTIs) region, these sites consist of shell works dating from ~ BC 1700 to AD 600 (Schwadron 2010). They are typically found adjacent to tidal channels or facing the open ocean within a matrix of mangrove-capped oyster bars and vermetid reefs (Parkinson 1989). These sites are vulnerable to accelerating sea level rise and anthropogenic climate change. Many have experienced several meters of horizontal erosion within the past several decades, leading to loss of cultural materials through toe scour and associated mass wasting. Integrated ecosystem restoration provides an opportunity for site stabilization through a combination of measures, including the construction of living shorelines. We are in Year 1 of a 5 year collaborative project to assess threats and condition and test stabilization methods for some of the most threatened and culturally valuable sites within the region.



Methodology

Combining the expertise of resource managers, archeologists, and geologists, site visits were made in early 2017 to assess condition of 7 sites in the TTIs.

We are currently prioritizing sites based on their geomorphic setting, current condition, and likelihood of successful stabilization given available resources.

A geospatial database of sites with their associated environmental and geologic settings, current threats, and selected intervention strategies will be created.

Stabilization and restoration strategies will be implemented and monitored at selected cultural resource sites.

Success of techniques will be evaluated with the help of a citizen science initiative.

LiDAR, Artifact Recovery, and Site Assessment

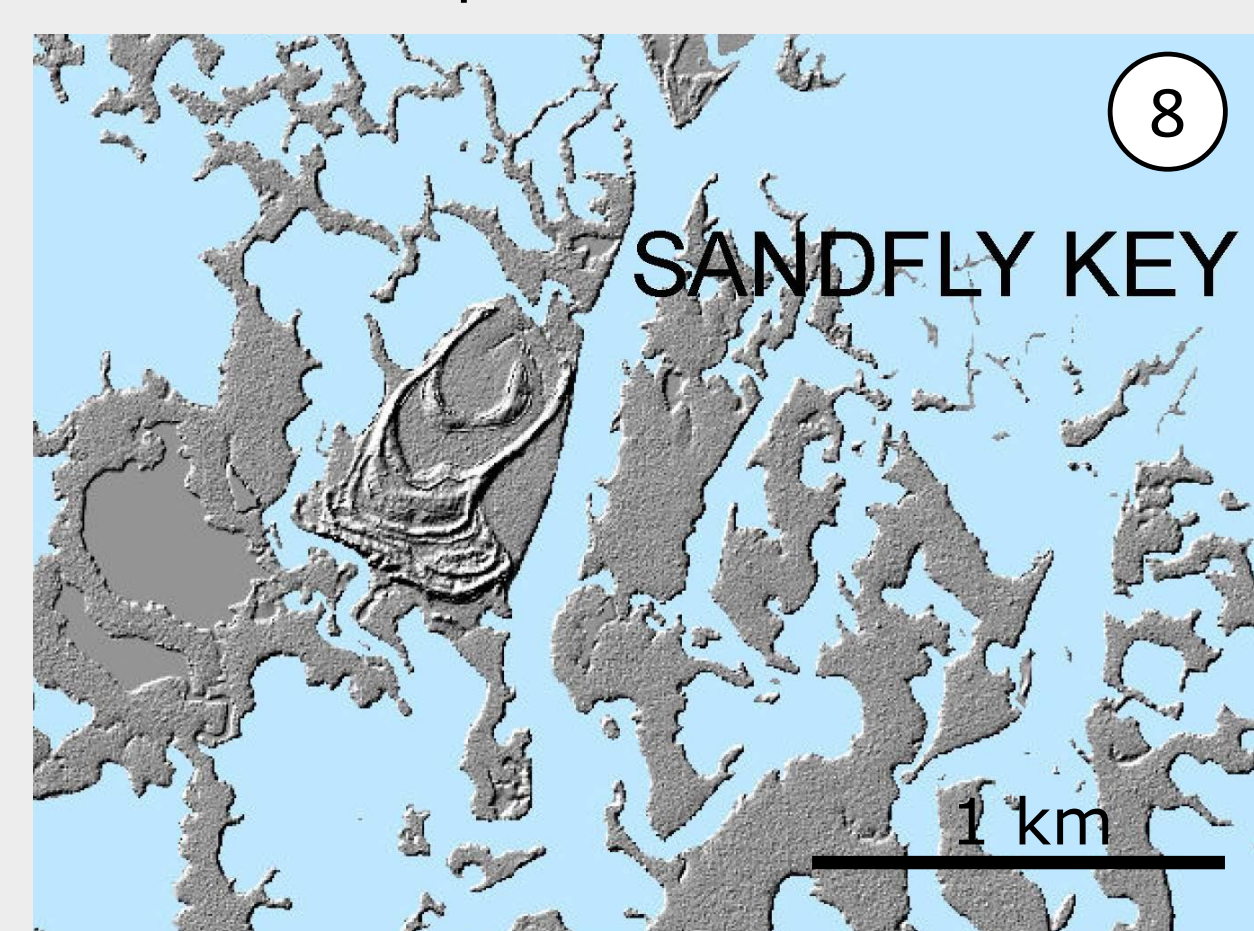


Figure 5. Margo Schwadron carefully removes a shard of prehistoric ceramic eroding out of a shell works site. The erosion of artifacts, prevalent across sites, is a loss of information about Florida's prehistoric cultural landscape.

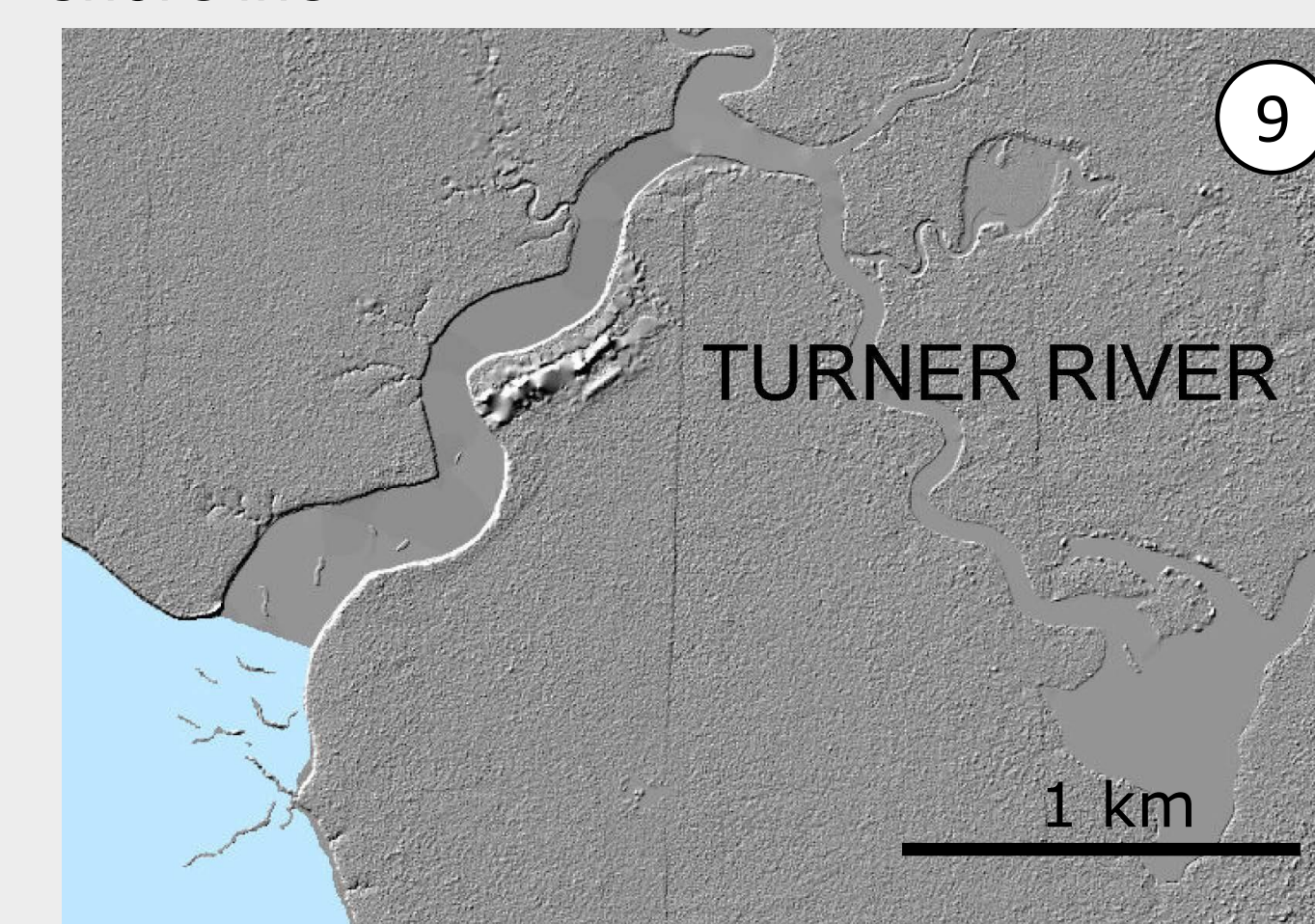
Figure 6. The relatively high elevation created by shell works sites, as much as 4 m above sea level, has resulted in colonization by hammock species. Gumbo limbo is a common species, observed here on Sandfly Key.



Figure 7. Randall Parkinson uses a probe to determine sediment thickness on Old Turkey Key along the southwest edge of an erosional, black mangrove fringed shoreline.



Figures 8,9. LiDAR-derived elevation maps of Sandfly Key (left) and Turner River shell works (right) reveal the site locations within variable physiographic contexts.



References:

Parkinson, R.W. 1989. Decelerating Holocene sea level rise and its influence on southwest Florida coastal evolution: a transgressive/regressive stratigraphy. *Journal of Sedimentary Petrology*, 59:960-972.
Schwadron, M. 2010. Landscapes of maritime complexity: prehistoric shell works sites of the Ten Thousand Islands, Florida. Ph.D. Dissertation. University of Leicester, Leicester, England.

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