

The Use of Terrestrial Laser Scanning (TLS) to Investigate Potential Rice Cultivation on the Isle of Hope, Georgia

Background

In May 2013, The Wormsloe Institute for Environmental History and The Center for Geospatial Research at UGA initiated a study aiming at investigating the possibility of rice cultivation at Wormsloe. The ultimate goal of this research is to cast some light on one of those aspects of Wormsloe's environmental history that has not been completely understood yet.



Freshwater pond which may have been used to irrigate rice fields.

Preliminary results

During the months of July and August 2013, two field surveys have been performed to assess the potential for rice cultivation at Wormsloe. In particular, Lowcountry rice cultivation experts such as Roger Pinckney and archaeologist Hayden Smith joined part of the field surveys to help locate rice cultivation evidence on the field. Given the presence of swampy areas, large ditches, and salty creeks surrounding the property, inland rice cultivation was deemed the most likely option in case rice was ever grown at Wormsloe; despite the fact that rice would tolerate slight concentration of salt in the water, in fact, brackish and salty water would prove fatal to growing rice. Preliminary analyses conducted thus far have revealed the presence of interesting features which may support the possibility that inland rice could have been grown at Wormsloe. This possibility is suggested by the following characteristics:



Remains of a man-made structure along the creek which may have been used to prevent salt water intrusion.



The presence of vegetation such as sweet gum is a good indicator of rice-prone soil.

- The presence of depression cones, or ponds, across the property may represent remnants of reservoirs, artesian wells, or springs which could have provided freshwater to the fields; furthermore, the presence of artesian wells and springs is also confirmed by old maps of the property.
- The finding of bricks along the creek's edge, which suggests the presence of a manmade structure that might have prevented salt water from contaminating the fields at high tide events; embankments along the marsh have also been identified on 19th century maps, thus suggesting the likelihood that these structures were built to protect the fields from salt water intrusion.
- The analysis of soil maps and samples has revealed the suitability of some areas for rice cultivation at Wormsloe. Soil samples analyzed by Rich Pepper and Holly Campbell, in fact, have revealed the presence of a poorly drained, sandy loam soil, which is compatible to that of the Savannah Wildlife Refuge, where old rice fields have existed in the past.
- The presence of vegetation such as cypress trees, gum trees, and marsh grass, in areas where old rice fields are expected is a good indicator of rice-prone areas.



Present-day topographic relief that may indicate the presence of rice field embankments.



Present-day runoff path that may have served as a quarter ditch for rice cultivation.



Marshy area where rice cultivation is expected to have existed.

- The location of features that may be part of embankments and quarter ditches in areas where rice cultivation is expected.
- The presence of wooden pieces that might have been part of old rice trunks to control the flood of water to and from the fields. However, further investigations aided by an archaeologist will be necessary to properly assess the nature of these features.
- The historical record of the freedman named Peter Campbell, living in one of the former slave cabins at Wormsloe, who raised 510 pounds of rice during the 1879 season.



Wooden sticks that may have been part of old rice trunks to regulate water flow in the fields.



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Next Steps

A visit to the old rice fields of the Butler Island Plantation will be performed on October 12 to get more familiar with old rice fields' features such as dykes and water control structures. Likely, soil samples will be collected to obtain a typical profile of soil that has been characterized by rice cultivation. In addition, a meeting with archaeologists Andrew Agha and Nicole Isenberger is scheduled on October 13 to perform a field survey at Wormsloe of the areas where rice fields are expected to exist.