

An Ancient Baldcypress Forest in the Northern Gulf of Mexico

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Approximately 13 km offshore from Orange Beach, AL there is a unique site where exceptionally preserved baldcypress stumps are located in 18 m water depth, which grew when sea level was lower than today, dated to the last glacial (40–70 ka). This project is investigating the ancient forest to better understand how this wood was preserved and to build a model to locate similar sites. In 2015 and 2016, the research team conducted geophysical surveys (bathymetry, sidescan sonar, and chirp subbottom) and recovered 18 vibra cores from the site. Seafloor mapping reveals a trough containing the tree stumps is located within a set of northwest-southeast trending ridges and troughs typical of the Mississippi-Alabama-Florida sand sheet. Subbottom data reveal a coherent reflector throughout the entire survey area 0–3 m below the seafloor. Companion core analysis indicates a ravinement surface between the Pleistocene muddy swamp facies containing the trees below and reworked late Pleistocene or Holocene sand above. Pollen and marine microfossil analyses of the longest core reveals the oldest interval is similar to modern northern gulf coast Cypress-Tupelo swamps that transitions to brackish environment dominated by grasses and sedges and then a Atlantic Coastal Plain Blackwater Levee/Bar Forests of North and South Carolina, suggesting colder conditions than today. Cross dating of wood specimens with bark intact suggests the trees died at the same time. We hypothesize that the site was quickly buried and preserved by floodplain aggradation associated with a quick interval of sea-level rise during the last glacial.