

Abstract

Geographic Information Systems (GIS) have been widely used for archaeological predictive modeling since the 1960s. For coastal archaeology, predictive modeling, which is the practice of using mathematical models to indicate the likelihood of archaeological site locations, cultural resources, or settlement patterns, is especially helpful in locating sites potentially endangered by coastline erosion and destructive forces. The purpose of this project was to determine if it is possible to predict the presence of unknown archaeological sites along Virginia's Chesapeake coast to aid in their preservation and site management. In order to predict the presence of sites, a baseline of favorable environmental conditions was determined from known coastline archaeological sites. Environmental variables considered include elevation, slope, wetland type, land type, and distance to the Chesapeake Bay. In order to explore if these environmental variables can be used to determine locations favorable to the establishment of campsites, spatial data about these environmental variables were used in two predictive modeling methods: fuzzy overlay analysis and maximum entropy. Each model's outcomes were compared with known site locations in order to determine their success. The results of each model successfully indicated areas of site location suitability. Although results for each model varied, the trends produced were similar. Finally, in order to better prioritize site management, a risk analysis was also conducted of perceived threats compared to areas in which the models predicted site presence. These risk areas were calculated using data on human degradation and coastal sea-rise threat. As this study demonstrates, using models to predict where potential sites can allow archaeologists to prioritize areas to study for resource management purposes.