Heritage in Peril
A Vulnerability Assessment of Ancient Sites in Greece with Regard to Both Human and Natural Destructive Factors

Introduction and Background

Ancient sites across the world are constantly in danger of destruction from natural forces and human actions. Efforts to protect these sites, which hold extremely valuable and irreplaceable information about the past, must be made quickly in order to preserve them. This project focuses on ancient sites in Greece to determine which ones are particularly vulnerable to destruction through a series of GIS operations. There are many factors that influence the vulnerability of a site. This project focuses on two categories: natural and human. The natural impact on archaeological sites is primarily due to climate change, threatening coastal sites with rising sea level and even inland sites with increased risk of natural disasters and changing weather patterns (Rowland, 1992). The human influences are more numerous and destructive. Ancient sites are sometimes used as backdrops for cultural events such as plays, films, and other events, and this use can be harmful to the delicate preservation of sites (Hatzoudaki, 2010). Urban development, however, is the most destructive process occurring at, near, and around archaeological sites. For example, the development of the Metro system in Athens threatened the stability of monuments across the city and displaced millions of artifacts (Scarpascu, 2021). The protection of these sites is growing increasingly difficult due to the economic recession in Greece and the lack of funding for preservation (Kakis, 2014). In accordance, this project studies eight destructive factors: railways, major roads, minor roads, coastlines, waterways, modern cities, land use, and category of site to determine the degree of influence each factor has on the potential destruction of a site. Knowing which sites are most vulnerable to destruction according to these factors can inform the placement and prioritization of funding for preservation.

Methods

Using ArcMap 10.2, individual vulnerability rankings (all beginning with 0) were recorded in new fields in the attribute table for the sites for each of the eight destructive factors considered, that were added together to determine a total vulnerability score ranging from 0-32. Finally, sites were divided into five categories based on their vulnerability score: Least Vulnerable = 0-7, Moderately Vulnerable = 8-12, Extremley Vulnerable = 13-16, Very Vulnerable = 17-20, Most Vulnerable = 21-32.

Using a spatial query to select features within these buffers (Figure 8), each buffer’s size was chosen to match the relative spatial influence of the factor. Railroads and roads have only a half-mile buffer placed around them because in order to construct a railroad or road, no more than half a mile of land on either side of the path would be disturbed (Figure 5-6). In the case of coastlines and waterways, three buffers (1, 2, and 2 miles) were made to represent different levels of potential waterway effect.