MS-GIST
Master Projects Fall 2021
Friday December 10th (Livestream via Zoom)

*** There will be 5 minute breaks between each presentation to facilitate transitions in Zoom.**

**** Zoom links available on a per request basis. Contact: atgrogan@email.arizona.edu**

Date/Time	Title	Person *
12/10/2021 3:00 – 3:30 pm	The Inequitable Distribution of the Urban Heat Island in Dallas County, TX	Isaias Segovia
12/10/2021 5:30 – 6:00 pm	The Archaeological and Historical Geospatial Analysis of the Port Chicago Disaster of 1944	David Kiger
12/10/2021 2:30 – 3:00 pm	The Florida Panther: Challenges to Keep This Endangered Species Moving Forward	Milton Munoz

The Inequitable Distribution of the Urban Heat Island in Dallas County, TX

Isaias Segovia
isegovia@email.arizona.edu

Abstract:

The urban heat island (UHI) effect is a phenomenon where urban area has a higher land surface temperature than surrounding rural areas due to human activities. This phenomenon is caused by the increasing urbanization and the removal of green vegetation. The combination of urbanization and climate change have intensified the UHI within urban area. Certain urban areas can see slightly higher UHI than other urban areas due to certain demographic, socioeconomic and land use factors within these urban areas. This study sought to see how the UHI effect is being distributed within Dallas County, TX. The city of Dallas is located within Dallas County and is the 8th largest city in the United States. The City of Dallas was one of the cities within the United States that was redlined by the US government. Redlining was the practice that was used to that barred minorities from moving into predominantly white communities and obtaining financial resources. This study used data from the Landsat 8 satellite to determine the UHI within Dallas County and how it is being disturbed within certain demographic, socioeconomic and land use factors. The assessment was done at the census tract level to determine if tracts within higher UHI had differences in covariates. An Ordinary Least Square (OLS) assessment was also used to determine the relationship between UHI and the covariates. Thru the assessment areas that are predominantly white, have a high median household income, and have a large percentage of canopy cover had a lower UHI than areas that are predominantly Black or Hispanic, that live below the federal poverty level, and have a large percentage of impervious surfaces. The OLS assessment found that the percentage of impervious surfaces, poverty below 125%, Black and Hispanic communities are significant factors within the UHI.

Keywords:

Urban Heat Islands; environmental inequity; socio-demographic characteristic; socioeconomic

The Archaeological and Historical Geospatial Analysis of the Port Chicago Disaster of 1944

David Kiger
dekiger@email.arizona.edu

Abstract:

The Port Chicago disaster that occurred on July 17, 1944, is a historically important, albeit infamous event for several reasons. 320 servicemen and civilians, mostly African American, were instantly killed and hundreds more were injured further away from the blast. The events surrounding the explosion highlighted racial injustices and shaped the eventual desegregation of the armed forced shortly after. Ensuing investigations were predominantly of a military nature and occurred before GIS technology became a multidisciplinary approach to analyzing events. With continuing advancements in the geospatial sciences, it is now possible to add a new dimension of history which can be made available on a variety of GIST platforms. Here, a collaboration of historical data obtained and managed by the National Park Service is georeferenced and presented in a manner that tells the Port Chicago story and can be continuously updated and expanded upon. Using Geospatial data platforms, this project seeks to analyze the Port Chicago disaster in two main areas: The physical phenomenon of the explosion itself, and the resulting historical/archaeological remnants linked to that explosion over space and time. Datasets and features are created and centered on the focal point of the explosion (which occurred on an ammunition loading pier which was destroyed) and have been digitized based on historical maps and imagery. Coordinate system selection for analysis seeks to minimize distortion as much as possible, considering the size of the blast information over a large study area that spans over different CA state plane zones. Digitization of historic structures and buildings is attained from museum sources (i.e., maps and diagrams). Damage "zones" were then created to summarize physical impact, such as deaths, injuries, percentage levels of damaged structures and associated costs. Historical imagery, diagrams, personal accounts, and archaeological remnants are then documented and embedded within their respective feature classes. A collaboration of over 100 artifacts, ground level photos, and documents are available to be accessed on ArcGIS Online and can be used to construct web-based mapping applications. Overhead photos were geo referenced and overlayed using control points to current base maps and satellite imagery. This can be continually updated and compiled upon as more museum resources are attained and donations made. This study highlights the integration of history/archaeology with modern GIST mapping and display abilities. It will further aid in telling the Port Chicago disaster across space and give the user another paradigm from which to view how historical events unfold.

Keywords:

Port Chicago, Naval Weapons, Archaeology, Explosion

The Florida Panther: Challenges to Keep This Endangered Species Moving Forward

Milton Munoz
munoz3@email.arizona.edu

Abstract:

Abstract: The endangered Florida panther (puma concolor coryi) continues to face challenges for expansion in the southern part of Florida. For decades, the Florida panther existence has been threatened by several factors such as genetic neurological conditions, and habitat displacement. With the rapidly growing population of Southwest Florida, the biggest danger for survival for the Florida panther today is habitat loss, and the proximity to busy roads and highways. The goal of this project is to display current Florida panther geographical range, areas with high indexes of vehicular mortality, and areas suitable for potential growth. Several datasets were obtained and manipulated to produce maps showing panther radio-collared telemetry readings, mortality records, and Florida land use over the years. A similar assessment was done to the Florida black bear, a species facing similar habitat issues in the Southwest Florida region. A habitat suitability model was done to measure potential areas for recovery after decades of extinction danger. Habitat suitability models are essential in the planning and development of wildlife corridors. The findings of this study could be used for Florida panther conservation projects, and wildlife protecting plans to maintain areas suitable for wildlife proliferation.

Keywords:

Southwest Florida, Radio-Collared Telemetry, Habitat Suitability, Vehicular Mortality, Wildlife Corridors