

# MS-GIST Projects Spring 2022

## Thursday, May 12

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

*\*\* Zoom links are available on request. Please contact Andrew Grogan - [atgrogan@arizona.edu](mailto:atgrogan@arizona.edu)*

Date/Time	Presentation Title	Student Name
05/12/22 08:00 - 08:25 AM	<a href="#">Investigating Vulnerable Populations Inhabiting Sea Level Rise Resilient Geography in Miami, Florida</a>	Samuel Pachito
05/12/22 10:00 - 10:25 AM	<a href="#">Site Suitability Analysis for a Land Conservation Easement in El Paso, Texas</a>	Daniel Van Essen
05/12/22 11:00 - 11:25 AM	<a href="#">A Spatio-Temporal Change Analysis of Shorebird Habitat Using Remote Sensing at Stillwater National Wildlife Refuge, NV</a>	Chelsea Ontiveros
05/12/22 12:30 - 12:55 PM	<a href="#">Finding The Tongva</a>	Alexander Gonzales

# **Investigating Vulnerable Populations Inhabiting Sea Level Rise Resilient Geography in Miami, Florida**

Samuel Pachito  
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05/12/22, 08:00 - 08:25 AM

## **Abstract:**

Sea level rise (SLR) in Miami demands attention from policymakers to consider environmental benefits such as higher elevation as potential disadvantages when possessed by vulnerable populations. Without examining higher elevation landscapes, certain demographic features within historically segregated neighborhoods risk unfair exposure to climate gentrification. To find communities most affected by SLR per select neighborhood and census tract, ArcGIS Pro was used to create bathtub models from USGS digital elevation models, and polygons containing American Community Survey census data, that were spatially joined to illustrate those affected by SLR per half meter interval. Finding that while 3 of the 4 contemporary neighborhoods retain predominate racial and ethnic character of each respective historical community, 25.6% of the total population were in poverty, and 2.8% were 85 and older. Little Havana (92.8% Hispanic & Latino) was most affected by SLR in area and by population count. The area lost per census tract across all SLR intervals ranged from 0% - 96%, with the most resilient census tract found in Little Haiti with < 1.5% area lost at 3.0 m of SLR. This study elucidates the demographic details of higher elevation locations possessing varying degrees of resilience but that are at risk to climate gentrification.

**Keywords:** sea level rise, climate gentrification, resilient elevation, Miami, Florida

# **Site Suitability Analysis for a Land Conservation Easement in El Paso, Texas**

Daniel Van Essen  
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05/12/22, 10:00 - 10:25 AM

## **Abstract:**

The Chihuahuan desert is an ecologically diverse landscape and the largest desert in North America, covering parts of New Mexico, Texas, and Northeastern Mexico. Urbanization, overgrazing, and water depletion threatens the viability of this ecosystem. For the protection of this desert and the wildlife and waterways within it, land conservation is integral. One land conservation strategy is the establishment of a land conservation easement. This type of easement is a voluntary agreement with a non-profit organization or government agency that prevents development and specifies best practices within the easement while the owner of the land maintains ownership. In response to the need of land conservation, this study utilizes a multi-criteria evaluation with weighted overlay technique to identify suitable and ecologically valuable land for a land conservation easement in El Paso County, Texas. Criteria for suitability was developed with Frontera Land Alliance, a non-profit conservation organization. GIS software was utilized to implement the multi-criteria evaluation with weighted overlay technique and map suitable conservation land in El Paso County. This study ranks all land within El Paso County based on a scale of five with one being the least suitable land and five being the most suitable land. Approximately 77,916 acres of land, equating to 12 percent of the land within El Paso County was ranked as a five in terms of high suitability. This study identifies the twenty-five most suitable parcels for a land conservation easement. The results of the study will help Frontera Land Alliance identify the most suitable parcels to pursue acquisition for a land conservation easement.

**Keywords:** site suitability analysis, conservation, El Paso County, Chihuahuan desert, multi-criteria evaluation

# **A Spatio-Temporal Change Analysis of Shorebird Habitat Using Remote Sensing at Stillwater National Wildlife Refuge, NV**

Chelsea Ontiveros  
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05/12/22, 11:00 - 11:25 AM

## **Abstract:**

Stillwater National Wildlife Refuge provides critical wetland stopover habitat for thousands of breeding and non-breeding migrating shorebirds during the spring and fall seasons. Habitat loss and degradation at the refuge due to climate change and human activities are of great concern to shorebird conservation groups. Evaluations of critical habitat features utilizing GIS can be leveraged as powerful, cost-effective tools in shorebird conservation and management efforts. In this study, three years (2001, 2011, and 2019) of remote sensing data captured during the fall season were analyzed for changes in select land cover factors impacting quality of shorebird habitat: presence of surface water using the Modified Normalized Difference Water Index (MNDWI), preferred land cover types, food and shelter availability using Normalized Difference Vegetation Index (NDVI), and human disturbance using impervious surface data. Results successfully detected temporal changes in many of the select environmental factors, including sizeable increases in NDVI and MNDWI results, both in value and spatial distribution, and notable transitions between land cover classes and their represented areas. Findings support the ongoing habitat conservation efforts at the refuge and demonstrate the use of remote sensing and GIS techniques in monitoring land cover conditions related to vital migratory shorebird habitat.

**Keywords:** Remote Sensing, Change Detection Analysis, NDVI, Shorebird Conservation, Stillwater National Wildlife Refuge

# **Finding The Tongva**

Alexander Gonzales  
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05/12/22, 12:30 - 12:55 PM

## **Abstract:**

Finding The Tongva is focused on Locating sites of Tongva influence throughout the county of Los Angeles. The county area was once the homeland of the Tongva Tribe who once had approximately 100 villages throughout Southern California. The Tongva tribe is not well known because the tribe does not have any reservations and most of the land is covered by urban and suburban construction. This project is focused on finding sites of significant Tongva influence to share with the public. The first part of the project was to find various websites that can provide locations and addresses to be converted into point features. These point features are separated into feature layers based on their attributes: Museums, People, Arts, and Monuments. The results show that there are around 100 places of Tongva sites including arts, monuments, museums, and organizations that are dedicated to preserving Tongva culture. The map also includes polygon features such as county boundaries and survey areas to show scale and general area. These results are then uploaded to ArcGIS Online to create a Web Application. This Web Application allows the public to visualize the data and allows for easy user interaction. The widgets allow the public to locate, modify, print, and search for routes on the map. The goal of this project is to preserve the Tongva's history and to teach the public about the tribe's value as a culture.

**Keywords:** Tongva, Los Angeles County, History, Tour