MS-GIST Projects Spring 2022
Tuesday, May 10

* 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

Date/Time	Presentation Title	Student Name
05/10/22 08:00 - 08:25 AM	[Using open-source python scripting to update fire perimeter datasets for the USGS](#)	Dallin Jones
05/10/22 12:00 - 12:25 PM	[Selecting Prospective Sites for Future Riparian Areas in Arizona](#)	Patrick Rhodes

Using open-source python scripting to update fire perimeter datasets for the USGS

Dallin Jones

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05/10/22, 08:00 - 08:25 AM

Abstract:

As occurrence and intensity of wildfires in the United States increases, the need for a centralized fire perimeter dataset is crucial for ecosystem, fire and other disciplinary analyses. In late 2021, the Combined wildland fire datasets for the United States and certain territories, 1800s-Present was created by the USGS to fill the need for a single multi agency and year dataset. While this dataset improves the ease of obtaining wildfire data; errors and assumptions create inaccuracies in the dataset that hinders the usability of the data. In response, open-source python libraries are used to iterate over the data and correctly identify fire perimeters based on decision tree methodology calculated by fire ecologists. This script successfully identifies smaller fires that would otherwise be grouped with larger focal fires. The final python script successfully identifies separate fire perimeters in the same calendar year, increasing the datasets accuracy and allowing smaller fires to be further analyzed.

Keywords: open-source, python, wildfire, Geopandas, fire-perimeter, USGS

Selecting Prospective Sites for Future Riparian Areas in Arizona

Patrick Rhodes

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05/10/22, 12:00 - 12:25 PM

Abstract:

Within the desert areas of Arizona, riparian habitat attracts a diverse range of flora and fauna, concentrating their populations along the banks of streams and washes. Due to a variety of factors over the past century, these areas have degraded in size and quality, resulting in a loss of native vegetation and wildlife habitat. Ultimately, if this trend is to be reversed, one approach might be to create new, artificial riparian areas. To achieve that, suitable, non-riparian locations must first be identified for possible conversion into prospective riparian zones. Hence, the goal of this project is to perform a suitability analysis to locate tracts of land within Arizona which might be suitable for riparian conversion. Issues such as water rights, engineering, and funding are not covered in this paper. Several spatial criteria were identified as indicators for success, including land ownership, flooding potential, fire potential, length of streams/washes, proximity to human development and current habitat. Many geographic datasets were utilized to produce maps showing these locations, according to their ability to apply these criteria. Further, once these locations were identified, a historical analysis was performed to show the vegetative health of each area over time, as well as potential rainfall metrics, both of which provided detailed indicators of success. The results revealed several tracts of land in disparate areas which fulfilled all criteria and could be considered for Arizona riparian habitat conversion projects.

Keywords: Artificial Riparian Habitat, Arizona, Suitability Analysis, Geovisualization, Riparian Restoration