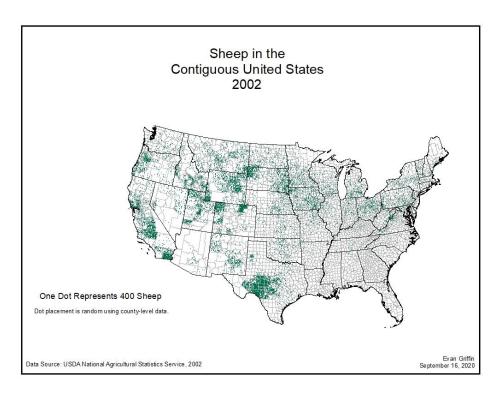


Geography/GIS Major Park University



GRADUATED SYMBOL — DOT DENSITY

Two Deadly Hurricanes, 2005 Tropical Depression Tropical Storm Hurricane, Category 1 Hurricane, Category 2 Hurricane, Category 3 Hurricane, Category 4 Hurricane, Category 5 Hurricane Katring Turks & Caicos Is. HURRICANE KATRINA Hait Dom inican Republic Puerto Rico Anguilla Formed August 23, 2005 Dissipated August 31, 2005 Highest wind speed: 175 mph (152 kts) Fatalities: 1,836 Damage: \$81.2 billion Honduras The costliest Atlantic Hurricane in history The sixth strongest Atlantic hurricane on record The third strongest hurricane to make landfall in the United States El Salvador Hurricane Emily HURRICANE EMILY Formed July 10, 2005 Dissipated July 21, 2005 Highest wind speed: 160 mph (139 kts) Fatalities: 15 Damage: \$550 million The strongest hurricane ever to form before August The earliest Category 5 hurricane ever recorded in the Atlantic Basin

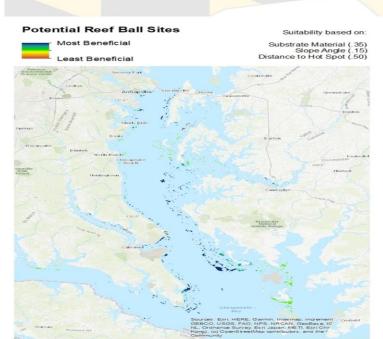


Evan Griffin September 29, 2020



SITE SUITABILITY ANALYSIS

Reviving the Bay: A Site Suitability Analysis Introduction



Data Source: data iman maryland dov

Identifying areas for artificial reef ball placement in Maryland's

Introduction

Oxygen levels have decreased in the Chesapeake Bay due to a myriad of human activities in and around the bay. Wastewater, air pollution, and both agricultural and urban runoff have contributed to deadly drop in oxygen levels for portions of the estuary ("Dead Zones", 2020). Research has shown that oyster reefs help filter much of the runoff that contribute to these dead zones and in addition, create turbulence along the bay floor that allows for oxygen to mix throughout deeper areas where it is normally scarce. Oyster aquaculture is booming in the bay, but many "dead zone" areas remain. This study locates areas where the placement of reef balls (artificial reef growing structures) could be placed in order to increase turbulence along the bay floor. With improved oxygen conditions, the reef balls can then be used to grow more oyster reefs, further restoring the Chesapeake Bay's water quality.

Methodology

Data collection: Data for this project was obtained from the State of Maryland's GIS website, data.imap.Maryland.gov. The datasets used contained a point feature class of dissolved oxygen at sample sites in the bay, a polyline topographic contour feature class, and a polygon feature class of benthic substrates of the bay.

Methods: The dissolved oxygen data was analyzed with the Getis Ord-G hot spot analysis to find clusters of low oxygen. The contour lines were converted to a DEM raster in order to determine slope. The raster calculator was used to distinguished slope areas of an angle less than 30 degrees. The benthic substrate polygons were also converted to a raster file, of which only the sand and sandy mud areas were kept as they are the preferred substrates for artificial reef. The low oxygen hotspot cluster data was used to create a Euclidean distance raster that calculated distance from the nearest hotspot. All raster data was reclassified to include the criteria of slope less than 30 degrees, sand or sandy mud substrate (sand ranking higher than sandy mud), and distance to a hotspot. These criteria were weighted so slope accounted for 35% substrate 15%, and distance to hotspot was 50% of the total final site analysis.

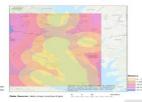
Results

Upon running all analyses, sites were selected on a scale that ranged from least beneficial areas to most beneficial areas for artificial reef ball placement. Areas that were deemed the most beneficial were located right before a steep drop-off into deeper waters. These areas are focused mainly near the mouth of the estuary before it empties into the Atlantic Ocean. Not all sites are necessarily suitable for oyster spat but will provide a much-needed mixing of oxygen in deeper waters.









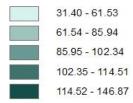
References and Data

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- Maryland Chesapeake Bay Dead Zones, (2020, October 27), Retrieved from https://data.imap.maryland.gov/datasets/2abad6ad2335468bb8c25648e9a6a106_0

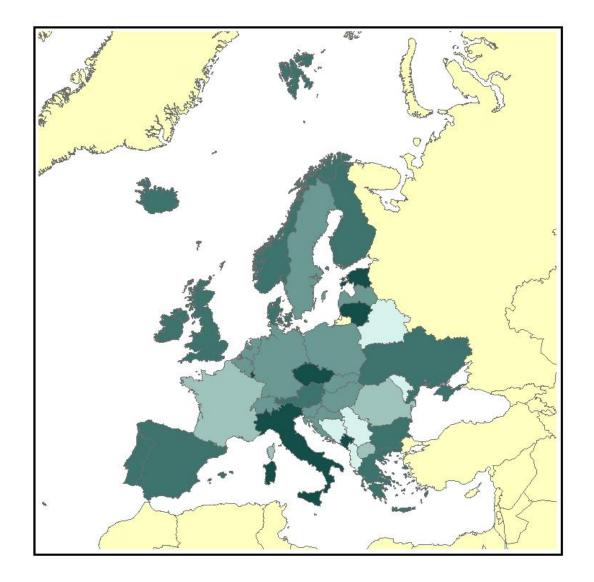


Mobile Phone Subscribers in Europe, 2006

Subscriptions per 100 Persons



Data for Albania, Andorra, Italy, Liechtenstein, Monaco, Netherlands, Sweden are from 2005



CHOROPLETH MAPPING

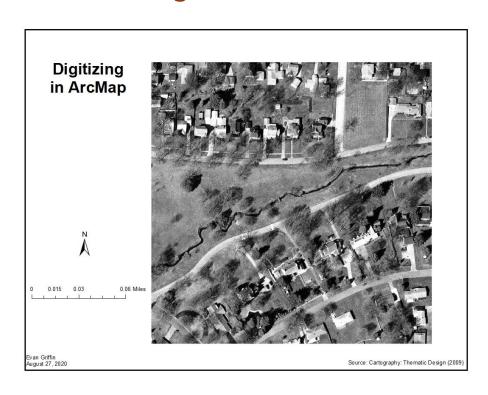
- Data presented to showcase usage by population
- Illustrative of major cartographic principles

Griffin ember 11, 2020

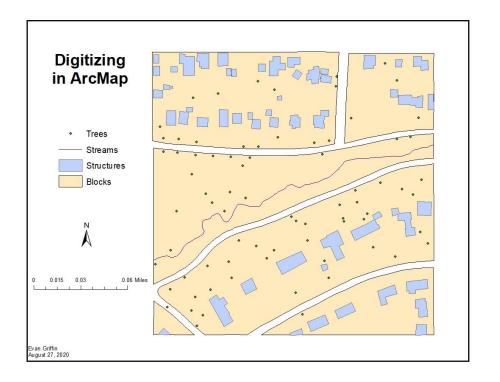


DIGITIZING POLYGONS, POINTS, AND LINES

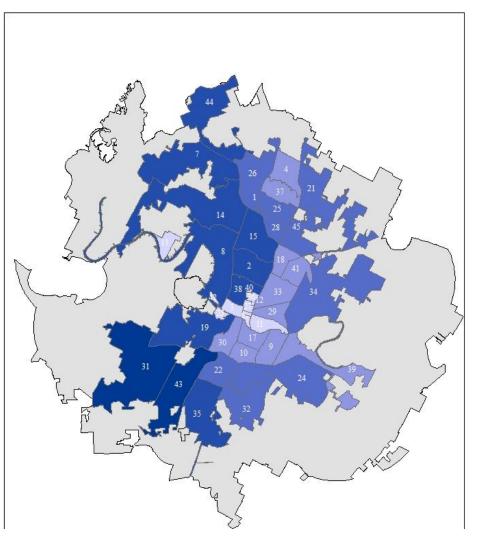
Satellite Image



Georeferenced and Digitized

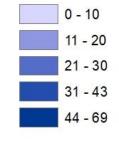


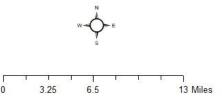




Police Officer Staffing Requirements Austin, Texas

Number of Officers





E. -- Ciffi

ANALYSIS OF ATTRIBUTE TABLE DATA

- Assessment of staffing needs of Austin Police Districts.
- Data tables joined
- Query Builder utilized to access pertinent data.



Spatial Interpolation Methods Rainfall in Ohio, inches, 2011 Spline Method **IDW Method** Ohiocountiesalbers 46.5515806 - 49.72613099 25.34252623 - 38.10273905 49.726131 - 52.54795357 52.54795358 - 55.5461400 55.54614007 - 58.54432656 58.54432657 - 61.54251305 53.49005454 - 57.61835868 61.54251306 - 64.5406995 64.54069955 - 67.7152499 67.71524996 - 72.6534394 72.65343948 - 82.35345459 Evan Griffin

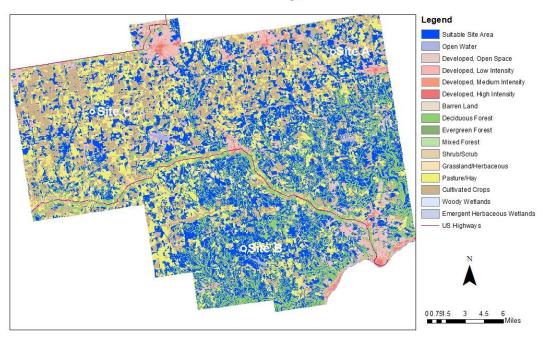
SPATIAL INTERPOLATION

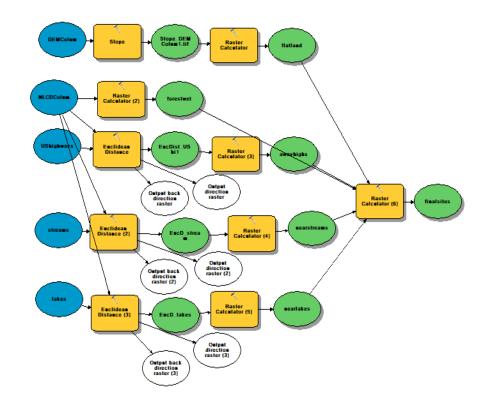
 Working with different algorithms to acquire desired results.



MODEL BUILDING FOR ANALYSIS

Potential Ecological Preserve Sites Columbiana County, Ohio





Source Data: The National Map USGS.gov

Evan Griffin November 19, 2020

