Wood Duck Habitat Suitability in Montgomery County

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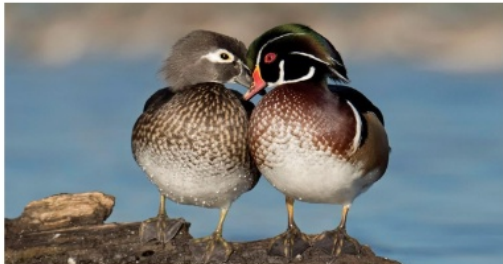
Introduction

We used ArcMap to locate suitable habitat for wood duck management in Montgomery County, MD, including the placement of wood duck boxes for nesting. We created a suitability model to locate suitable habitat within Montgomery County protected lands according to slope (which can indicate where standing water may be found) and land use.

Result/ Discussion

We found that there is limited suitability for wood ducks in Montgomery County. Black Hill Regional Park is the best suited for wood ducks in the county. The land in this park is protected, county owned, and has restricted human activity. Within this park, there is also a low slope allowing for standing water..

These aspects of the park make it the most suitable habitat for wood ducks in Montgomery County.

Methods

-Selected by attribute for the Maryland protected lands layer where "County" = "Montgomery" and created a new layer from the selected features to be input into the suitability model

Creating the Suitability model:

  -Input the Montgomery County DEM raster to the slope tool to find the slope in degrees of each cell

  -Input the protected lands layer into the Feature to Raster tool and reclassified the protected lands raster with a value of 1 for each cell

  -Input the land use layer into the Feature to Raster Tool and reclassified the land use layer according to the following scale:

    -Water – 1
    -Developed – 2
    -Barren – 3
    -Forest – 4
    -Shrubland – 5
    -Herbaceous – 6
    -Plant/ Cultivated – 7
    -Wetlands – 8

  -Created a weighted sum with the inputs weighted by the following scale:

    -Protected land – 2
    -Land use – 1
    -Elevation – 1

  -According to the weighted sum, a raster was generated displaying levels of suitability within the county's protected lands
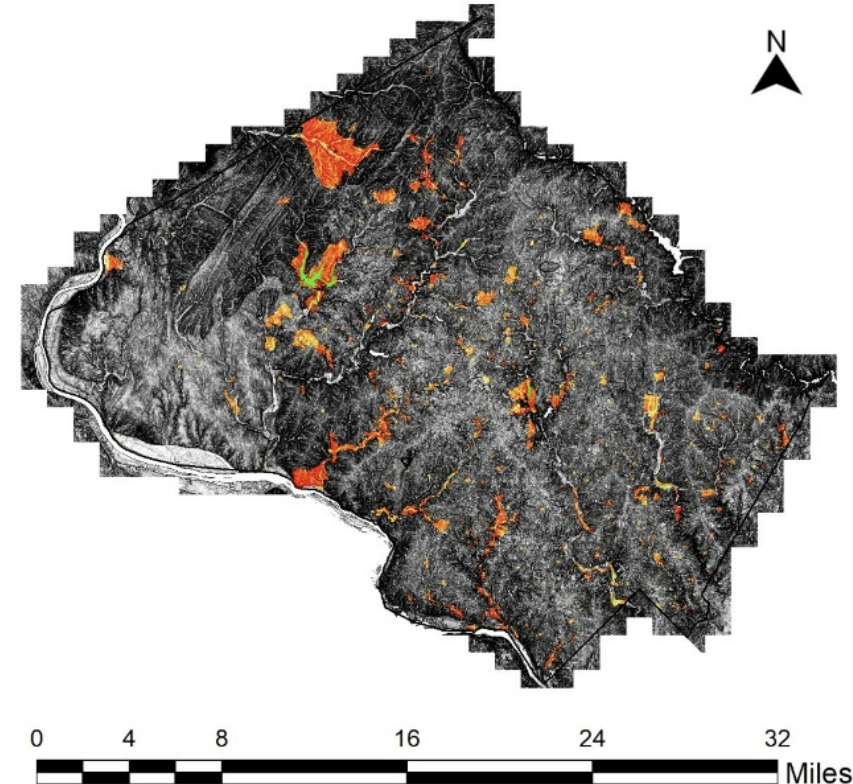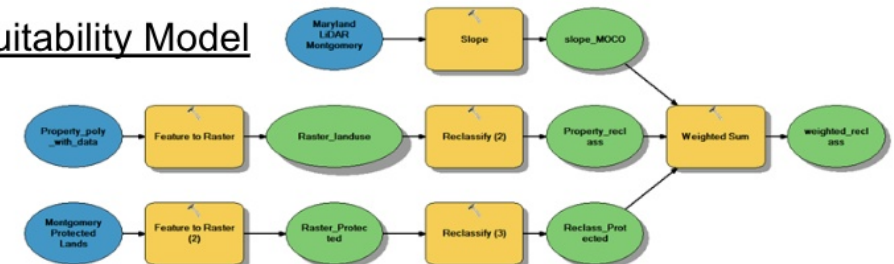
Legend

Suitability

- Most Suitable
- High Suitability
- Good Suitability
- Adequate Suitablility
- Low Suitability
- Bad Suitability
- Not Suitable

Slope (degrees)

- 0 - 9.458458665
- 9.458458666 - 22.42005017
- 22.42005018 - 33.63007525
- 33.63007526 - 43.4388472
- 43.43884721 - 52.54699258
- 52.54699259 - 61.30482468
- 61.30482469 - 69.36203021
- 69.36203022 - 76.71860917
- 76.71860918 - 89.32988739

N

0   4   8   16   24   32   Miles

Suitability Model

Sources

1. UMD

Maryland Protected Lands:
https://data.imap.maryland.gov/datasets/maryland::maryland-protected-lands-local-protected-lands/explore?location=39.172794%2C-77.194042%2C11.76

Maryland Land Use:
https://hub.arcgis.com/datasets/maryland::maryland-land-use-land-cover-land-use-land-cover-2010/explore?location=39.186303%2C-77.264298%2C13.53

Maryland Road Centerlines:
https://data.imap.maryland.gov/datasets/maryland::maryland-road-centerlines-comprehensive/explore?location=39.166701%2C-77.255605%2C13.40

Maryland LiDAR DEM: https://www.arcgis.com/apps/mapviewer/index.html?layers=474bb0b3df484e979a390f39ba4cc47d