

Using Local Processing and Zonal Processing to Identify the Amherst Wetland Most Likely to Have Penguin On Its Shore

An aerial photograph of a wetland area. The landscape is dominated by dense green forests covering rolling hills. Several small, dark blue bodies of water, likely ponds or marshes, are scattered throughout the terrain. The lighting suggests it's either early morning or late afternoon, casting long shadows from the hills.

Modeling Geographical Space; Zixi Liu; Feb 18, 2020

Largest Wetland In Interest

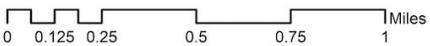
large_wetland.tif

Value
High : 256256
Low : 44924

landcover

TYPE

- 0 Open
- 1 Field
- 2 Forest
- 3 Gravel
- 4 Water
- 5 Wetland
- 6 Road
- 7 Building



To Myah and Aleah,

Don't worry! Using the information your parents provided and performing GIS analysis, I have identified the Amherst wetland where you lost your toy penguin!

Warm regards,
Zixi



Region Group, Break Amherst into Small Areas Without Water or Road

"Mom Says We Never Crossed Any Water Or Roads On Our Walk"



Figure 1.1 Landcover of Amherst



Figure 1.2 Water and Roads at Amherst

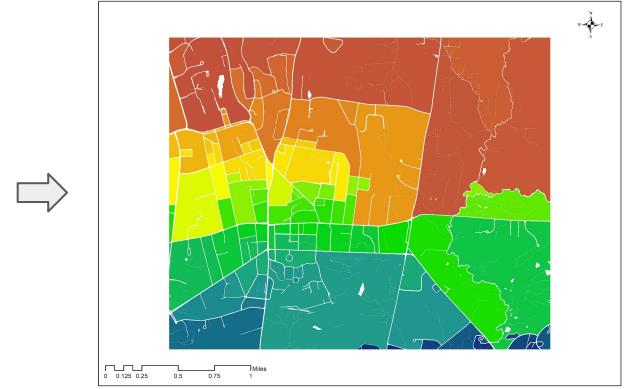


Figure 1.3 Small Blocks Without Road or Water

Methodology

In this stage, we first used **Reclassify** tool to exclude roads and water from landcover and then use **Region Group** tool to break Amherst landcover into small blocks without any water or road. We do this step because Myah and Aleah did not cross any water or roads during their walk, so we want to identify the blocks of they have walked through.

Zonal Statistics, Break Amherst into Small Areas With Forest and Without Forest

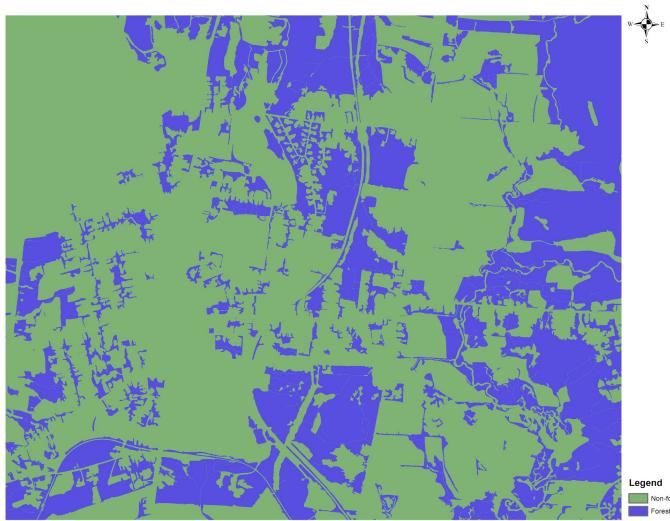


Figure 2.1 Areas With Forest and Without Forest

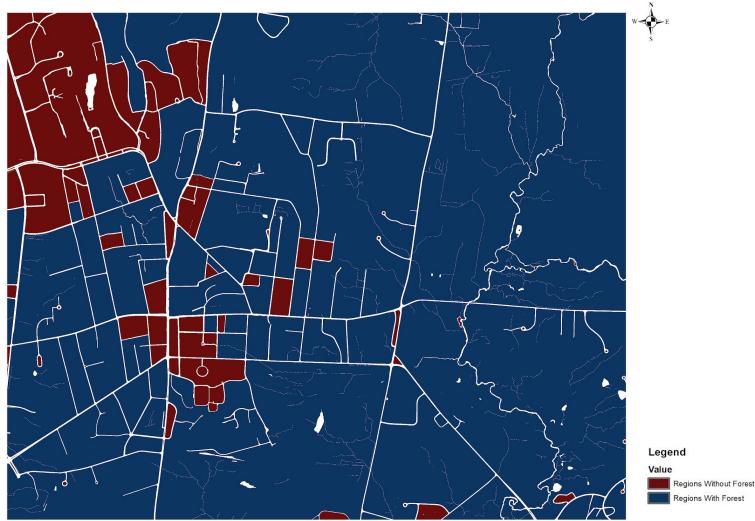


Figure 2.2 Break Amherst into Small Blocks With Forest and Without Forest

"We Took My Dog Sadie For Walk Through the Forest"

In this step, we used **Zonal Statistics** to identify the small blocks with forest and small blocks without forest. The reason we do this step is that Aleah said they walked through a forest and therefore we will only consider small blocks with forest.

Zonal Statistics, Identify Wetlands Larger Than One Acre

"Dad Said We Passed Four Pretty Large Wetlands (All Bigger Than An Acre) But This Was The Largest Of Those Four."

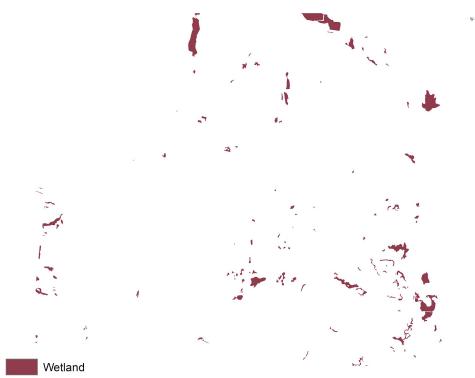


Figure 3.1 Wetlands in Amherst



Figure 3.2 Break Wetlands into Blocks

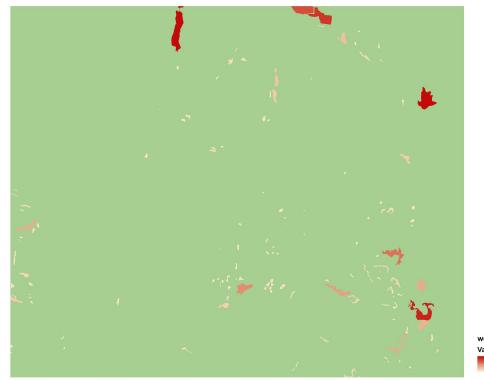


Figure 3.3 Wetlands by Area

Methodology

We first used **Region Group** tool to divide wetlands into small blocks. Then we used **Zonal Geometry** to calculate the area of each wetland. The reason we did this step is to identify the large wetlands (bigger than an acre).

Zonal Statistics, Identify Block That Has Four Large Wetlands

"Dad Said We Passed Four Pretty Large Wetlands (All Bigger Than An Acre) But This Was The Largest Of Those Four."



Figure 3.4 Wetlands Larger Than 1 Acre



Figure 3.5 Wetlands Larger Than 1 Acre



Figure 3.6 Blocks With More Than Four Large Wetlands

Methodology

We then use **Raster Calculator** to get large wetlands (area larger than one acre) and then reclassify the large wetlands. Then we use **Variety in Zonal Statistics** again to get the block that has four large wetlands.

Zonal Statistics, Identify Block That Has Four Large Wetlands And Forests

Reclassify



Figure 3.7 Block With Four Large Wetlands

**Zonal
Geometry**

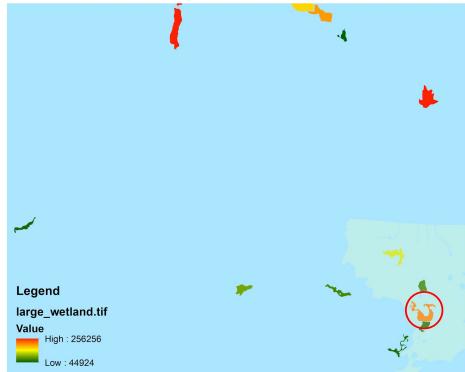


Figure 3.8 Largest Wetland In the Area

The Wetland Most Likely to Have Toy Penguin

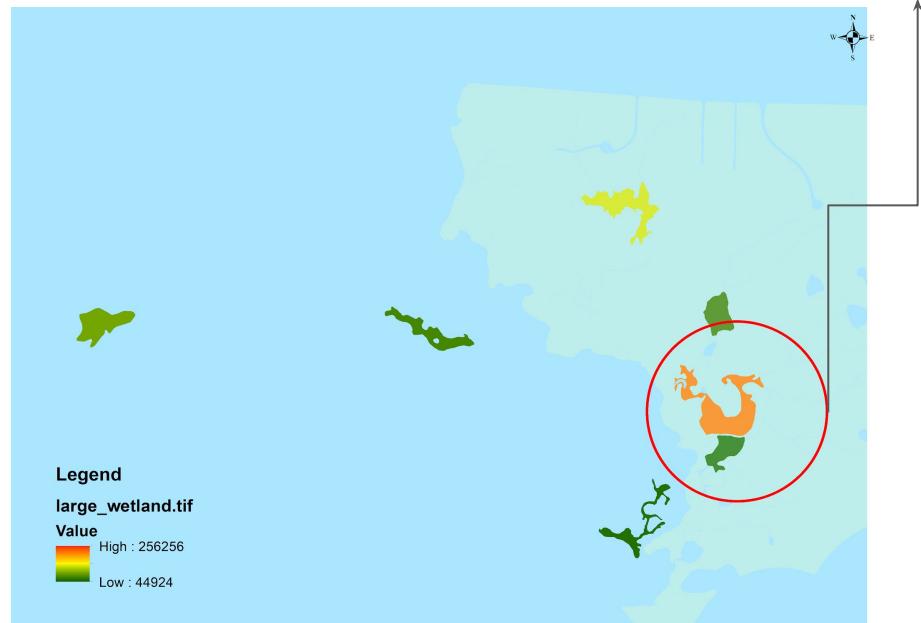


Figure 3.9 Largest Wetland In the Area That Has Four Large Wetlands and Forest