Assignment 5: Raster Analysis

(60 Points Total)

Data available under Resources>UK Data.

The following raster layers have been provided for the entire extent of the United Kingdom. Both grids have been resampled to a 100 m cell size to reduce processing time.


The provided uk_data.gpkg GeoPackage contains the United Kingdom country boundaries and are from the United Kingdom Data Service.

countries_bound: boundaries of England, Wales, Scotland, and Northern Ireland

Description of Problem

An invasive plant species is threatening the United Kingdom. The plant is known to occur:

1. At elevations less than 600 meters
2. On slopes less than 20 degrees
3. In agricultural land cover
4. Within 20 kilometers of urban or developed land cover.

Using raster analysis techniques, create a binary output where all cells that meet all for criteria are coded to 1 and all other cells are coded to 0. The results should cover the full spatial extent of the United Kingdom and have a cell size of 100 meters.

Some hints:

1. In the land cover data codes 12 through 21 represent agricultural lands. Codes 1 through 11 represent urban areas.
2. The entire analysis can be completed using just the raster data and raster analysis techniques.

Deliverables

- Provide a write up that clearly explains the methods that you used to create the model. A reader should be able to replicate your process from the write up. (20 Points)
- Create a map layout of your results exported to PDF format. The layout should: (20 Points Total)
- Have areas that were identified as being at risk clearly identified. (4 Points)
- Contain a descriptive legend. (4 Points)
- Include the boundaries for England, Scotland, Wales, and Northern Ireland. (2 Points)
- Be masked to the extent of the United Kingdom. (2 Points)
- Include a scale bar, north arrow, and title. (4 Points)
- The map should be overall neat, well organized, and use the space well. (4 Points)
- Summarize the results for each country to calculate the land area and percentage of potentially threatened land in each country. Present your results as a table. (20 Points)