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.


**uk_dem100m.tif**: digital elevation model with units in meters (https://www.eea.europa.eu/data-and-maps/data/copernicus-land-monitoring-service-eu-dem)

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 four 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)
Invasive Plant Threat

- Not Threatened
- Threatened
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