

Instructions for the practical test:

You should have downloaded a zip file at the end of the theoretical portion of the exam. The zipped file contains an image called "0. MAP_TO_REPLICATE.png", instructions, and several data files. Reproduce the map example using the data provided. Your map should look **exactly** like the example (unless otherwise specified) including elements such as fonts, colors, symbols, layer order, legend styles, approximate sizes, projections etc. Check the rubric for exactly what you will be evaluated on.

Your task is to replicate the map that displays the occurrence locations of the American Black Bear in the United States as they relate to major rivers in the southeast. The vector data file 'US_Ursus_americanus.shp' contains a point data layer representing occurrence locations of the American Black Bear (*Ursus americanus*) in the United States (each point represents one occurrence location; the ID value in the attribute table is just a label, not bear counts). In contrast with most of the other bear species around the world, this species is currently not considered (by the International Union for the Conservation of Nature — IUCN) to be globally threatened with extinction. This is due to its widespread distribution in North America and large population size (estimated to be twice as large as the populations of all other bear species combined). The occurrence locations represented in the point vector data file were obtained from the Global Biodiversity Information Facility (GBIF - <https://www.gbif.org/>). If at some point you encounter a warning sign that states "No spatial data exists for input layer," this should not impact your results.

In addition to making a map of this data in the southeast, we are interested in seeing how many of these occurrence locations are in different defined areas and how many are near major rivers in the United States. There are three questions you must answer using various geoprocessing techniques in addition to replicating the map. You'll answer these questions in the Sakai text box.

Questions

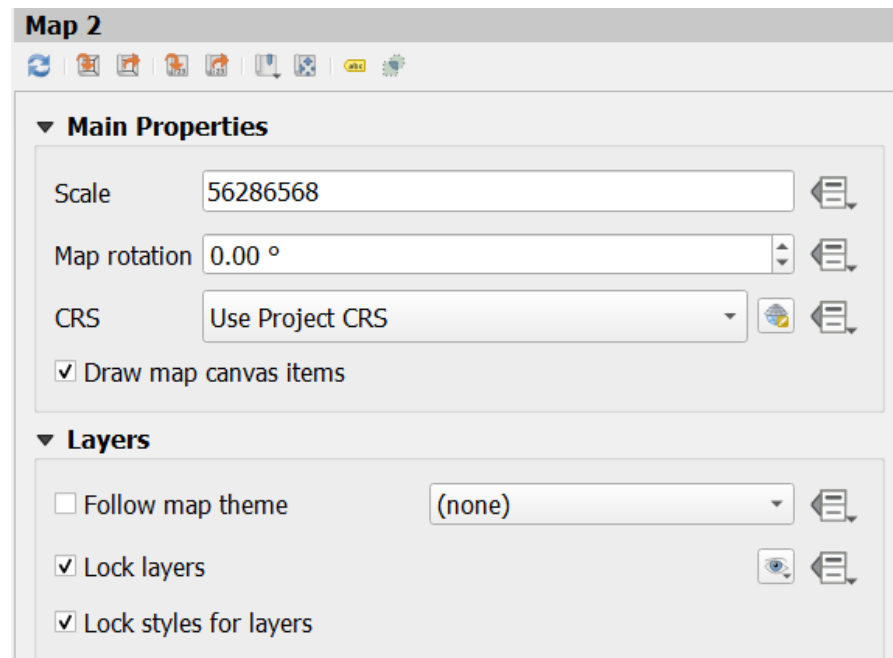
For each question, explain the steps you followed to reach your answer.

1. How many black bear occurrence locations are within 10 miles from a major river in the Southeast?
2. How many black bear occurrence locations are within 10 miles from the Chattahoochee River?
3. What *proportion* of all black bear occurrence locations are within the state of California?
4. What *proportion* of all black bear occurrence locations are **NOT** within 50 miles from a major river?

Other Instructions

- When reprojecting your layers, use ESRI: 102039.
- Southeast States = Louisiana, Arkansas, Mississippi, Alabama, Georgia, Florida, South Carolina, Tennessee, and North Carolina.
- Your colors do not have to be the *exact* same as those in the map, but it must be *approximately* the same color. i.e. you won't be counted off if it's not the same *exact same shade* of Red but you will if it is Purple instead of Red.
- While creating your buffers, if you only see "Degrees" as a Distance option, it means you haven't correctly reprojected the layer to ESRI: 102039.

- *Hint:* when creating the locator map, you will need to check the following boxes under “Layers” so that the styles remain unchanged in the Layout View when you change styles for the main map in the Project view.



- See the rubric in Sakai to see how you'll be graded.

Deliverables

Before the end of the day Wednesday, submit (1) your completed PNG map on Sakai, (2) the answers to the three questions in the Sakai text box, and (3) a link to a GitHub repository with your legend layers. They do not have to be in WGS 84.