NR 143 GIS
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Assignment
STUDENT PROJECT PROPOSAL

For this assignment, you will identify a topic for your student project, search for data, and assess the metadata for your candidate GIS layers. The information from this assignment will be used in the next assignment where you will download data for your student project. The data layers you identify as part of your student project will need to focus on a single (preferably environmental) issue. Therefore, you will need to identify and assess data layers needed to address one environmental issue of your choice. The following list provides examples of past student projects that you might want to consider as well:

- Number of endangered species within conserved lands. Identify biodiversity hotspots and test if they coincide with the location of conserved lands.
- Deer wintering areas that are not located within conserved lands and need to be conserved.
- Identifying potential new conservation lands. The VT Land Trust has funds to purchase new conserved lands. Identify and prioritize candidate areas for conservation.
- Deer wintering areas near roads to identify potential risk for traffic accidents. You could then make recommendations for reducing speeds on specific roads.
- Hazardous sites near water bodies and streams (pollution potential). You could prioritize sites for cleanup.
- Fragmentation of conserved lands by roads (habitat impacts). Conserved lands vary in their ability to support diverse habitats particularly if fragmented by roads. You could prioritize conserved lands based on fragmentation (road density, core area, shape, etc.)
- Development within 100 feet of wetlands (VT Wetland Rules) – buildings that are potentially in violation of the Vermont Wetland Rules
- Determine the location of hazardous sites within a particular distance from schools. Imagine you have been hired by VT ANR to prioritize cleanup sites near schools.
- Determine the areal extent of conservation areas or forested areas or agricultural cover within a town, county, or watershed. You could then use this information to prioritize rezoning to protect certain areas or to clean up pollution. You could compare those metrics by town, county, or watershed.
- Compile a GIS database (roads, buildings, open space, land use…) for a town or watershed of your choice to address a particular environmental issue

Think about applying the power of GIS to a real life issue or need. One final warning – your student project is worth 15% of your grade. The effort you apply now for this assignment will greatly reduce the amount of time and effort (and frustration) required to complete your analysis later! Get your act together now or suffer the consequences later.

In preparation, you should review a set of lecture slides entitled "Project Design" and a reading of the same name (both are on the course web site [links in the schedule]). Doing so will help you understand the process needed to complete your student project and prepare your proposal for this assignment. You

should also check out previous student projects located on the course web site. *Finally, reread the Vector and Raster Analyses lectures to think about what specific GIS functions you will use and in what order.*

Your assignment is to prepare a proposal that contains the following sections:

1. Introduction - Identify an environmental issue, provide a rationale for issue.
2. Objective of your student project.
3. Candidate GIS layers – identify and provide a general description of each GIS layer.
4. Assess the metadata for each layer in a Summary Table.
   give source scale, coordinate system, geographic extent (e.g. statewide, tile, town, etc.), raster or vector (if vector, point, line or polygon), map units, source map for each candidate GIS layer **in a table.** (there is an example table in the project document on the course website).
5. Attribute Assessment - Identify attributes (by name) and define critical attribute classes for each candidate layer that you will need to use for your project (read the metadata).
6. Determine/describe analyses for these data (query, overlay, buffer, etc.)
   a. **make a flowchart** of the GIS processing steps. The flowchart should include the exact GIS functions by name for each processing step.

FOR FULL CREDIT - provide a 2-3 page (typed and double-spaced) summary paper which describes the environmental issue of your choice (or one from the list above), addressing each of the sections identified above. You will also need to identify important attributes for each layer that you will use for your analyses. For example, if you have a project to assess prime agricultural lands (based on soils data) you need to know that, for example, prime ag soils are represented in the attribute table under the Field called "Type" and as attribute class "ltcb". Reading through the metadata and defining attribute classes can take some time! Use a minimum of 2 input layers and try not to use too many (a maximum of 5 is probably a good rule of thumb). No teams - work independently.

This assignment is due Friday, April 6. Upload your completed proposal in PDF format to the NR 143 homework upload site. The assignment is worth 10 points. Address each of the required items listed above – preparation of the flowchart will take some time.

You will probably not need to download the data layers until the next assignment, but you'll need to check out the metadata files for each of your candidate layers (if no metadata are available you should consult with the instructor). You'll need to make sure that the map projection and datum for all layers match (or you may have to reproject the data). The scale of the data layers should also be in a "similar" scale range. For the next homework assignment, you will download the layers and import them into a geodatabase.

Flowchart tips - You can create a flowchart in Microsoft Word, PowerPoint, or whatever software you are familiar with. If the flowchart was made with Microsoft software, you can COPY and PASTE the flowchart into your Word document. If the flowchart was made with some other software, you could SnagIt as a jpeg file and insert it into your Word document.

***Final note** – think about your student project proposal carefully. If you change your project objective, you will have to redo much of this assignment.*