

Lesson Title: Eco-Oregon

Lessons Summary: In this lesson, students use skills gained from the Web-based GIS tutorial to explore the many ecoregions found within Oregon. Students will be able to explore the connections between ecoregions, precipitation and vegetation while also developing an understanding of the land use within each ecoregion.

Before you begin using this module, you will need to know about using the ArcGIS Server Web-based GIS viewer. You can do this by watching the server tutorial video or working through the tutorial. The tutorial video, student activity, and Web-based GIS Tutorial Viewer can be found at <http://gis.lanecc.edu>. Go to the “Modules” tab and click the Tutorial link. You will need a high speed Internet connection and a current version of Adobe Flash Player.

Prior Skills: You will need to know how to turn layers on and off, use the IDENTIFY tool and, zoom in and out of the map, toggle from layers to the legend, and perform a search (Boolean) query.

Computer steps are indicated by a ► symbol. Questions you need to answer are numbered. Record your answers on the answer sheet.

- Connect to the **MAPS-GIS webpage** at: <http://gis.lanecc.edu>
- Click on the **Modules Link** .
- Click on the link to **Eco-Oregon**.
- Choose **Link to the web-based map**



The page will take a minute or two to load. The base map will load first then the other data layers. If it stalls at 55%, just click the **refresh** button on your browser.



- Before beginning, let’s make sure you remember where all of the tools are and how you use each one. The toolbar is found in the upper right hand corner of the screen. Scroll over each of the following tool icons and record their function on the lines below.



- ▶ Turn off *ALL* data layers of the map. Do this by un-checking the box next to each layer. The resulting map should look like the picture shown here.



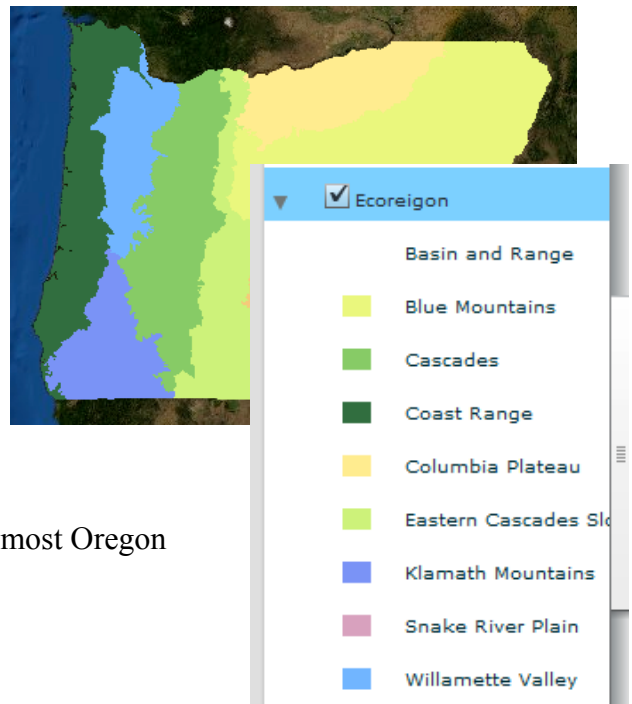
1) What type of geographic pattern do you see among the green shaded areas on the map (Hint: think about what you already know about ecosystems and their relation to the equator)?

- ▶ **Zoom in** so that the continental United States fills your screen.
- ▶ Turn on the “city” layer.

2) Are there more cities in the green areas or the brown areas?

3) Why do you think this geographic pattern exists?


- ▶ Turn off the “city” layer.
- ▶ Turn on the “ecoregion” layer. You should now see the outline of Oregon.
- ▶ **Zoom in** so that Oregon fills your screen.
- ▶ You can see the key for these different ecoregions by clicking on the arrow found on the left of the check box. This allows you to show the key rather than hide it.



4) How many different ecoregions do you see in Oregon?

5) Predict which three ecoregions you would expect to find most Oregon cities in?

6) Explain your answer.

- ▶ Turn on the “city” layer.
- ▶ Use the ecoregion key to answer the next question, or if you have trouble distinguishing the colors of the key you can use the **Identify** tool  and click on the ecoregion. This will display a table of data for this ecoregion. The name for the ecoregion is found under the “LEV3_NAME” heading.

Identify Features: Ecoregion

Copy All to Clipboard Copy Selected to Clipboard

LEV3_NAME	OBJECTID	OBJECTID_1	Shape	Shape_Area	Shape_Leng	Shape_Length
Cascades	8	8	Polygon	55858987188.8:	1885143.24505	2206069.42855:

7) In which three ecoregions do most Oregon cities appear?

8) Does this map support your answer to question 5?

- ▶ Turn off the “ecoregion” layer.
- ▶ Turn on the “precipitation” layer.

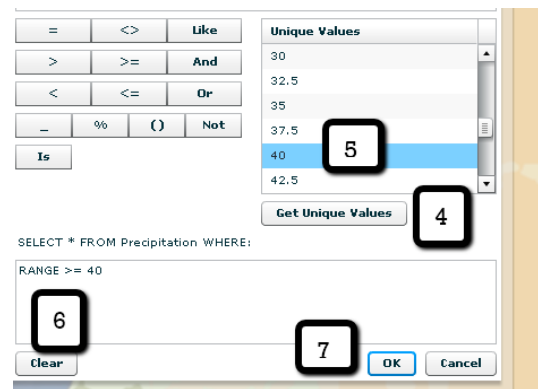
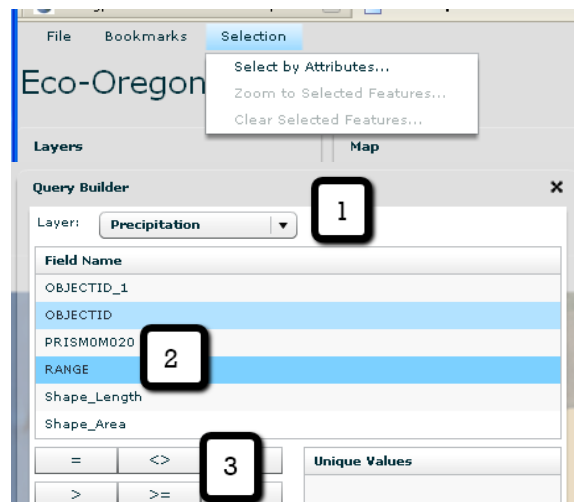
9) Which areas of the state receive the most precipitation? Remember to open up the key!

The Douglas fir (*Menziesii*) is a popular Christmas tree species grown here in Oregon. It requires at least 40 cm of rain to grow. Let’s perform a **Query** to see where exactly this tree species could grow in Oregon. Remember, a query asks a question of the data that creates the map.

- ▶ In the upper left hand corner of your screen, click the **Selection** tab. It will pull down a menu.
- ▶ Click **Select by Attributes**.

A **Query Builder** box will open. Follow these steps to complete your query:

1. In the **Layer** pull down box choose “Precipitation.”
2. Under **Field Name**, double click on “Range.”
3. Single click on “>= ”
4. Single click on **Get Unique Values**.
5. Double click on “40”
6. Confirm that “Range >= 40” is in the dialog box.
7. Single click on **OK**.



10) When the map opens, use your pencil to shade in the selected areas (areas with greater than or equal to 40 cm of precipitation per year) on the map in the answer sheet.

- ▶ Turn on the “vegetation” layer.



11) Look at the key and determine where Douglas fir trees actually grow in Oregon. Use your pencil and shade in the areas of actual Douglas fir growth on the map provided.


12) Explain what geographic feature could account for the difference in the two maps.

13) Using the information you have gained from the precipitation and vegetation maps, what type of industry do you think you would find in the area where Douglas Firs grow?





- ▶ Turn on the “land use” layer.

14) Does the dominant industry shown on this map support your answer to Q13?

15) In which regions of the state is agriculture the dominant industry?

- ▶ Use the **Draw** tool  to circle the land used for Parks and Recreation.
- ▶ Turn on the “ecoregion” layer.

16) If you wanted a job in the Parks and Recreation industry, which ecoregion would you live in?

- ▶ Use the **Clear Drawing** tool  to erase your drawing.
- ▶ Turn on the “city” layer.
- ▶ Using the **Identify** tool , locate Springfield, Medford and Bend. It helps to keep track of them by using the **Draw** tool  to make a circle around the cities. If you make a mistake with your drawing, simply use the **Clear Drawing** tool .

17) In what ecoregion is each of these cities found?

- ▶ Turn on the “land use” layer.

18) What are some possible careers that a person in each of these cities could have?

Career Extension

- ▶ Go to the website: <http://www.esri.com/industries.html>
 - ▶ Find a career that might be of interest to you. For example, in the Natural Resources list there is a link to Forestry. In the forestry link there are several job descriptions in the Industry Focus.
 - ▶ Prepare a half-page summary of the types of things that someone would do in this career using GIS.
 - ▶ Search the Internet and look for job possibilities, salary, and locations.
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