



Group Activity: How biodiversity impacts ecosystem services

Names of Group Members: _____

Objectives of this Activity:

1. Explore the connection between the biodiversity of different ecosystems, various ecosystem services, and measures of human well-being.
2. Explore how regional biodiversity produces ecosystem services and how ecosystem service provision is regionally distributed.
3. Report your findings to the rest of the class.
4. Review and respond to the findings of the rest of the class.

Instructions:

1. Technically, your group only needs one computer to complete this activity, but it may be helpful to have multiple computers going so that you can expand the breadth of your group's explorations. It will also be necessary to work on separate computers when you reply to the work of other groups.
2. To complete this activity, you must visit the U.S. Environmental Protection Agency's "EnviroAtlas" tool. Below is the information you need to gain access to this tool:

URL: <http://enviroatlas.epa.gov/enviroatlas>

3. For the first part of this activity we will be using the "Eco-Health Browser". You can access this tool by clicking on the middle-column link that reads "**EnviroAtlas Eco-Health Relationship Browser**"
4. The introduction page for the *Eco-Health Browser* provides you with instructional text and video. Read the text and/or watch the video to familiarize yourself with how this tool works. When you have introduced yourself to the tool, click where it says "**Launch the Browser**".
5. Start exploring the connection between ecosystems, the services they provide, and measures of human well-being by navigating the "Topics" drop-down menu located in the top right corner of the *Eco-Health Browser* ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒
6. Explore various ecosystems by using the interactive features of this tool to connect ecosystems to the services they provide and measures of human well-being. Notice that hitting the "+" connectors explains the science that substantiates connections depicted in the browser. Take note of any connections that are of interest to members of your group.
7. After exploring a variety of these connections, discuss in your group which of these connections you consider to be of greatest interest. Fill out the chart on the following page with your four (4) most interesting/important/relevant connections.



Your group's connections of interest between ecosystems and human well-being:

Ecosystem	Ecosystem Service	Health Outcome	What makes this connection interesting/important/relevant?

8. The *Eco-Health Browser* is currently under development, so it is not complete. **What ecosystems, ecosystem services, and/or measures of human well-being would be valuable to add to this tool? Explain your answer.**

9. For the next part of this activity, we will be using EnviroAtlas' "Interactive Map" tool. You can access this tool by returning to the *EnviroAtlas Home* page and clicking on the "**EnviroAtlas Interactive Map**" link. On the main EnviroAtlas page, hit the "**Launch the Map**" link.

10. The *Interactive Map* is a fairly complex and sophisticated tool. Below are some hints for using this tool:

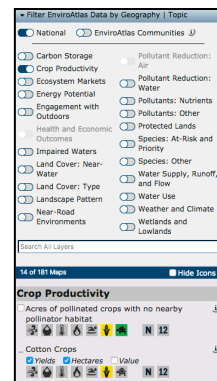
- To take full advantage of the screen space you have, make your browser window "full screen" when navigating the *Interactive Map*.
- Keep in mind that you can change the base map that is displayed by hitting the "Basemap Gallery" button. ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒
- This map is capable of displaying data on the continental United States at a great variety of scales. Use the zoom in/out tool to change the scale of your map. ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒
- The *Interactive Map* contains a number of communities with very granular data. Access these communities using the "Community Selection" button. ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒



e. Layers of data can be displayed on the *Interactive Map* by choosing from various databases. The database control panel allows you to turn different features on or off ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒

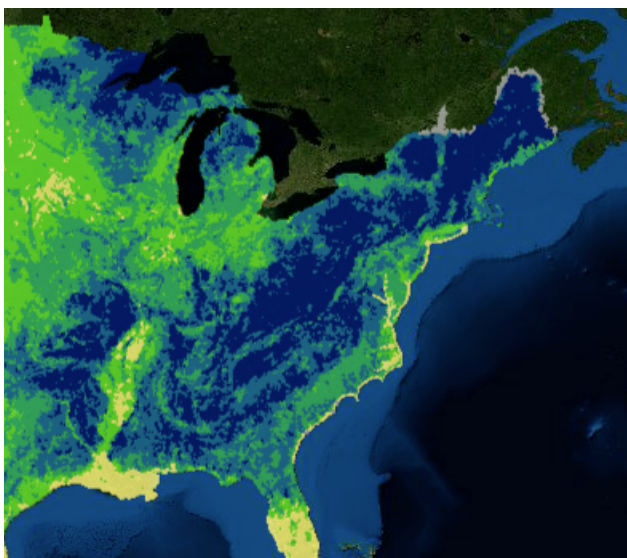
f. By checking off different sources of data on the “Layer List”, you can display this data as a layer on the map at any available scale (please note that some data layers are only available for certain regions and/or are only relevant to certain scales).

g. You can compare the patterns displayed by two different data sources by opening up two browser windows — both running the EnviroAtlas interactive map — and bringing up different data layers on each map.



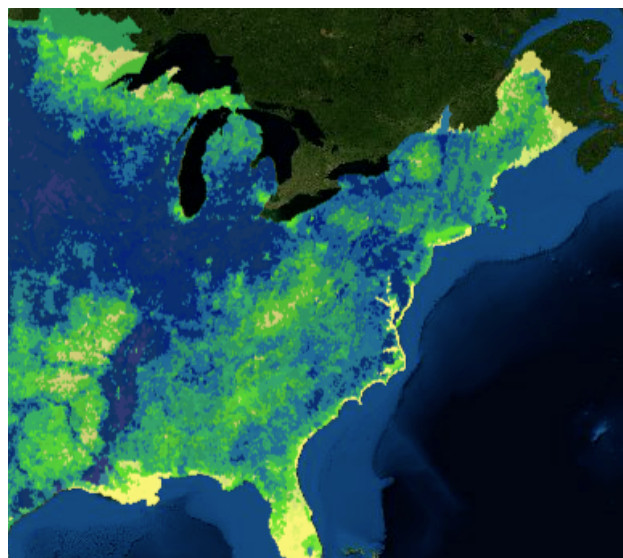
11. For today, your goal is to discover interesting patterns of correlation (either “direct” or “inverse”) between *measures of biodiversity* and *measures of ecosystem service provision*. Here is an example of two maps that show an inverse relationship between these two measures at a fairly large geographical extent (note that you can explore whatever scale/extent you want):

measure of biodiversity:



(note that this map has been left unlabeled intentionally -- make sure that you indicate what measure of biodiversity is represented on each of the maps you post)

measure of ecosystem service provision:



(note that this map has been left unlabeled intentionally -- make sure that you indicate what measure of ecosystem provision is represented on each of the maps you post)

12. Using the *Interactive Map*, find relationships between *measures of biodiversity* and *measures of ecosystem service provision*. Make sure that you “capture” these relationships by taking screenshots of both your “biodiversity” and “service” data layers at the same scale and spatial extent (see example above).

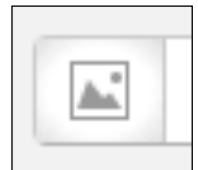
13. Once your group has found a correlation that you believe is significant/important/interesting, record the following information about this correlation in the table below:

measure of biodiversity	
measure of ecosystem service provision	

What kind of correlation can be seen between the maps of these two “measures”?	
How do you explain this correlation? Why might this correlation exist?	

14. After you have filled out the table above, take screenshots of your two maps so that you can share them with the rest of the class via a post to this week’s WORKSPACE forum. Make sure that your post:

- Indicates in the SUBJECT area the relationship you are demonstrating through your post (*for example*, "Percent Forest Cover versus Grain Yields").
- Uses the MESSAGE area to display the relationship between a clearly labelled measure of biodiversity and a clearly labelled measure of ecosystem service provision. Clearly label the data source for each of your map images, which can be inserted on the LMS using this button. ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒ ⇒
- Provides your explanation of the relationship you discovered. What kind of correlation is this? Why are these two different measures correlated in this manner, and what does that tell us about the relationship between biodiversity and ecosystem services?
- Lists somewhere in the MESSAGE area of your post the names of all group members.



15. How might we use this kind of mapping in urban planning and development? What is the potential value of knowing the geographical relationship between biodiversity and ecosystem services?