Undergraduate 100-level assignment

Local Biomes, Anthromes and Novel Ecosystems

An example based on a 100 level Biology Course: Principles of Ecology, taught at Texas Tech University, Lubbock, Texas, USA.

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For more information, including answers and an editable word document please contact:

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ASSIGNMENT 1: <LUBBOCK'S> BIOMES, ANTHROMES, AND NOVEL ECOSYSTEMS

Learning Objectives:

- Construct and accurately label a climate diagram from weather station data (monthly averages for temperature, minimum temperature and rainfall).
- Use and interpret a climate diagram to identify a biome.
- Identify anthromes and quantify their coverage for a given area using interactive maps.
- Able to describe the relationship between biomes, anthromes and novel ecosystems.

Total Points: 46

Preparation:

- Read Chapter 2 of Molles, and review the lecture notes
- Make sure you have access to a spreadsheet package and are comfortable using it to construct graphs (e.g. Excel).
- Note: bulleted text **in bold** is a question that you need to answer (or activity you need to do) – there will also be the number of points indicated.

Technical Submission Information:

- Use the blank form below and fill it in using a word-processing package – MS word (.doc) or save as an .rtf file. Do NOT use Word 2007 – save as Word 97-2003 format (Blackboard is not always compatible with 2007). If you use a different word-processing package, save as .rtf.
- You can embed the climate diagram in the document (copy and paste) or submit as a separate attachment
- Submit in the Assignments area of Blackboard by adding the file (s) as an attachment

Part A: Lubbock's Biome

- **Construct a climate diagram for Lubbock, using the following information. (20 points)**

Weather station LUBBOCK REGIONAL AP, LUBBOCK COUNTY is at about 33.65°N 101.81°W. Height about 991m / 3251 feet above sea

	Average Monthly Temp/ °C	Average Monthly Rainfall/ mm	Average Monthly Min Temp/ °C
J	3.7	13.9	-4.1
F	6.1	14.9	-1.8
M	10.6	20.7	2.4
A	16.1	28.6	8.1
M	20.7	70.0	13.2
J	25.1	71.7	17.9
J	26.6	56.2	20.0
A	25.5	54.2	19.0
S	21.7	61.5	15.2
O	16.3	44.4	8.9
N	9.8	17.0	2.5
D	4.7	14.3	-2.6

NOTES:

- You should use Excel or a similar spreadsheet package to plot the diagram. If you are unable to do so, you may produce the diagram on graph paper and scan it in for submission.
- You can submit the graph as a separate attachment or embed (copy and paste) in the word document with the rest of the assignment.
- You should follow the format of the climate diagrams given in Molles, EXCEPT you do not need to shade the diagram (with the blue, yellow and green). DO make sure the diagram has a title, all axes are labeled, and all other information conventionally provided on a climate diagram is there.

- **Which biome does Lubbock fall into? (2 points)**

Insert Climate Diagram Here or attach as a separate file:

Part B: Exploring Lubbock's Anthromes

- Use the interactive map of anthropogenic biomes (anthromes) at the link below to explore the anthromes within an approximately 150 km radius of Lubbock (there is a scale bar on the bottom left hand side of the map).
  http://www.ecotope.org/anthromes/v2/maps/a2000/

- **List all the anthromes within c. 150 km of Lubbock (9 points)**

- **Which are the two anthromes cover the greatest area of land in our area? (2 points)**

- **How have the characteristics (climate --include information from your climate diagram--, vegetation, soil) of Lubbock's conventional biome promoted or restricted the conversion to these anthromes? (5 points).**

Part C: Novel Ecosystems

- Read the Nature Feature Article by Emma Marris "Ragamuffin Earth", that is provided as an attachment.

- **How does Erle Ellis define a novel ecosystem? (2 points)**

- **This definition differs from that given by Hobbs et al. 2006 (see your lecture notes), what do you think was Ellis's rationale for this reinterpretation? (2 points)**

- **Erle Ellis estimates that as much as 35% of the globe is covered by novel ecosystems. From the map on page 452 of the article, approximately what percentage of land in the South Plains area is taken up with novel ecosystems? How would you explain this coverage? (4 points)**