

<b>Name:</b>	Dylan Leinweber
<b>Title:</b>	Ecosystem Monitoring Study
<b>Subject:</b>	Science 7 Unit 1 – Ecosystems and Interactions
<b>Grade(s):</b>	7
<b>Critical Challenge:</b>	Human effects on ecosystems
<b>Enduring Understandings?</b>	To understand how humans effect ecosystem biodiversity and how to monitor the long term health of an ecosystem
<b>Curriculum Correlations:</b>	<p>1. Investigate and describe relationships between humans and their environments, and identify related issues and scientific questions</p> <ul style="list-style-type: none"> <li>• illustrate how life-supporting environments meet the needs of living things for nutrients, energy sources, moisture, suitable habitat, and exchange of gases</li> <li>• describe examples of interaction and interdependency within an ecosystem (e.g., identify examples of dependency between species, and describe adaptations involved; identify changing relationships between humans and their environments, over time and in different cultures—as, for example, in aboriginal cultures)</li> </ul> <p>2. Monitor a local environment, and assess the impacts of environmental factors on the growth, health and reproduction of organisms in that environment</p>

### Critical Thinking Tools

<b>Background Knowledge</b>	<ul style="list-style-type: none"> <li>-Ecosystems</li> <li>-Niches</li> <li>-The scientific method and observation skills</li> <li>-Abiotic and Biotic</li> </ul>
<b>Criteria</b>	<ul style="list-style-type: none"> <li>-Data comparison of the amount of species in each location</li> <li>-Type of species</li> <li>-Biodiversity of each location</li> </ul>
<b>Vocabulary</b>	<ul style="list-style-type: none"> <li>-Observation</li> <li>-Biodiversity</li> <li>-Evidence</li> <li>-Accuracy</li> </ul>
<b>Thinking Strategies</b>	<ul style="list-style-type: none"> <li>-Cooperation</li> <li>-Using evidence to justify opinions</li> </ul>
<b>Habits of Mind</b>	<ul style="list-style-type: none"> <li>Attention to detail</li> <li>Critical thinking</li> <li>flexibility</li> </ul>

## Assessments

<b>Formative</b>	-During group work teacher is circulating the classroom coaching students on the project. Also during presentations teacher and students can question students as to how they met the criteria and came to their conclusions. -Use of exemplars for students to compare their work to expectations
<b>Summative</b>	-Lab Report to be completed by all students so that they can share their findings with the scientific community

## Activity Steps

1. Teaching the background knowledge, specifically how to make observations and write them down
  - a) Using a daikon shaped as a candle to explain the differences between inferences and observations
  - b) Lessons on ecosystems, niches and biotic/abiotic
2. Take the students into the school yard to take observations on the species that live in a man-made environment
3. take the students to a naturalized place to take observations on the species that live in the naturalized space (outdoor classroom)
4. Have the students use digital and library resources to identify the species in both places
5. students complete their lab reports

Name:

Score: /45

## Quadrant Study Lab Report

**Problem:** Can humans create naturalized environments?

**Manipulated Variable:** (the variable you are changing in a logical manner)

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**Responding Variable:**

- Measuring the different organisms in each environment
- Measuring the different abiotic conditions of each environment

**Controlled Variables:** (the variables you keep the same in order to ensure your data is reliable and that you are only measuring one manipulated variable)

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**Hypothesis:** (If: how you solve the problem or the M.V. ... than: your prediction about the R.V. ... because: scientific reasoning)

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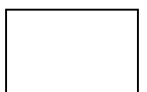
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**Procedure:** Use numbered steps (as many as necessary) to outline the procedure. Your procedure must be explained in enough detail that someone else can redo the experiment exactly how you did it based off of your instructions

1. Fill out your hypothesis, manipulated variable, responding variable and controlled variable based on the problem
2. Create a 20ft by 20ft quadrant in the field outside of the grade 7 doors.
3. Monitor your entire school yard for evidence of any bird or animal species and record observations on your table
4. Within your square record the abiotic conditions on the appropriate table
5. Within your square record evidence for all plant species on the appropriate table
6. Within your square record evidence for all insect species on the appropriate table
7. Return to class and use resources to identify all species based off of the observational evidence found for the existence of a species in the school yard
8. Create another quadrant of 20ft by 20ft in our school's outdoor classroom
9. Monitor the entire outdoor classroom for evidence of any bird or animal species and record observations on your table
10. Within your square record the abiotic conditions on the appropriate table
11. Within your square record evidence for all plant species on the appropriate table
12. Within your square record evidence for all insect species on the appropriate table
13. Remember when an organism exists in too high of a number to count record it's number at TNTC (too numerous to count)



**Data Collection:**

Data Collection from the school yard (10 marks)

Table 1 - Biotic Table

Species Name	Observations	Count

Table 2 – Abiotic Conditions

Abiotic factor	Level
Windiness	
Temperature	
Amount of Sun	

Data collected from Outdoor Classroom (10 marks)

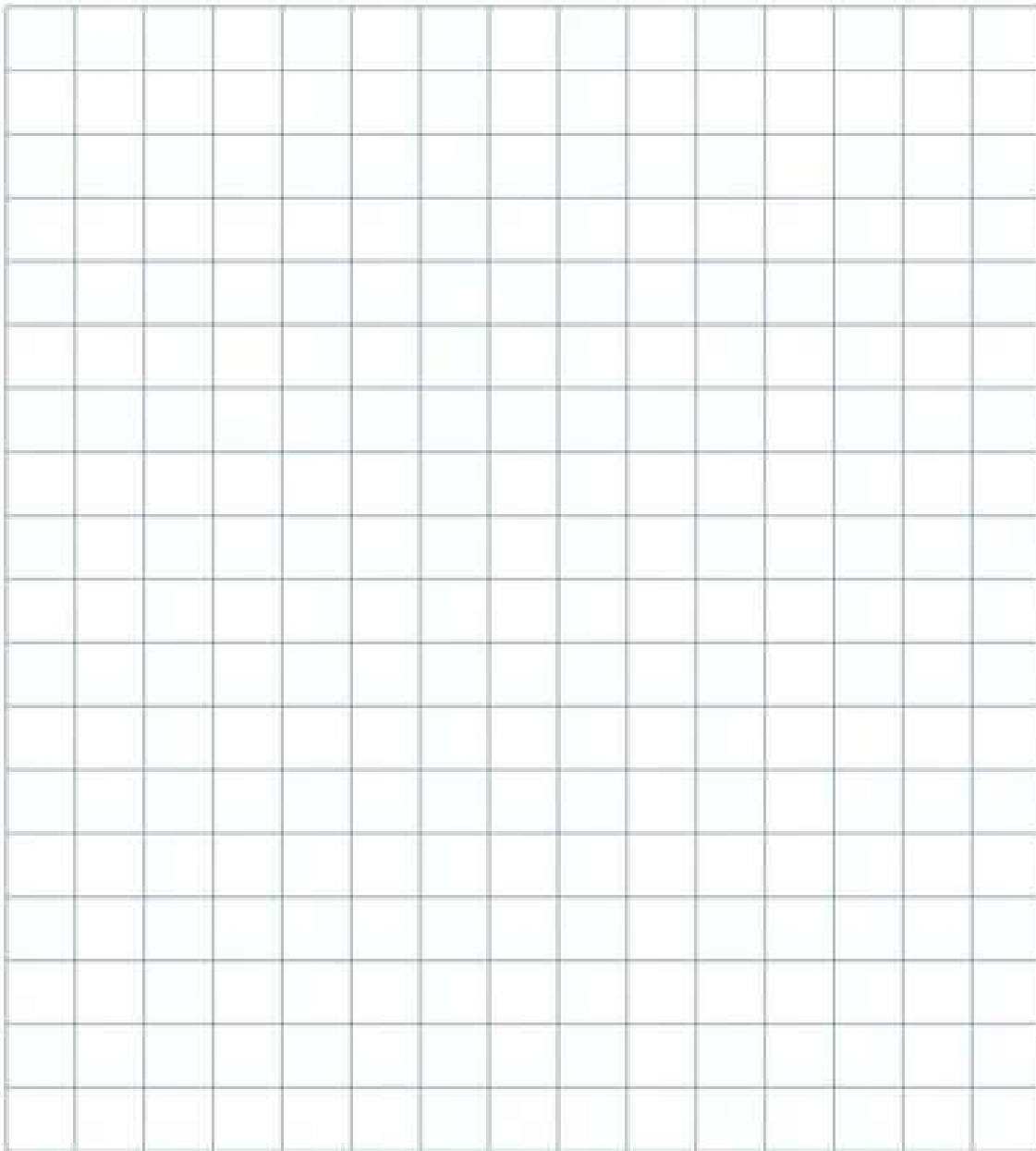
Table 3 - Biotic Table

Species Name	Observations	Count

Table 4 – Abiotic Conditions

Abiotic factor	Level
Windiness	
Temperature	
Amount of Sun	

**Results:** Create a **bar graph** to compare the difference in the **total number of different species identified** at Wagner Bog and the School Yard. (remember to properly title the graph and the x and y axis) (5 marks)



**Conclusion: \*justify your answers with evidence from your lab\***

1. Which ecosystem had a greater population of living organisms? (1 marks)
2. Use evidence from your lab report to explain which ecosystem had a great variety of species. (2 marks)
  
3. Explain what difference there was in abiotic factors between the 2 ecosystems? (2 marks)
  
  
4. Was your hypothesis correct? Why or Why not? (2 marks)
  
  
  
  
  
  
  
  
  
  
5. Using evidence from your lab, determine what species filled the following niches (If you do not have a species in your data to fill that role, write N/A for not available) (5 marks)
  - a. Producer: \_\_\_\_\_
  - b. Decomposer: \_\_\_\_\_
  - c. Herbivore: \_\_\_\_\_
  - d. Carnivore: \_\_\_\_\_
  - e. Omnivore: \_\_\_\_\_
  
6. Explain in a paragraph why you think the outdoor classroom **has or has not** met the needs of living creatures to create a more naturalized environment. Use evidence from your lab to justify your opinion. (5 marks)



