

Field Study
Ecology
AP Biology
Lindemulder

This project will require you to engage in observational data collection by describing an ecosystem in detail. This will require you to examine an ecosystem individually. As a culminating activity, you will create a digital representation of the information you collected (Prezi). You should include pictures and/or video to support your work.

Part I: Identify and describe the ecosystem

- A. Give a basic description of your ecosystem (What biome would you classify this ecosystem as?)
- B. Identify as many separate populations of living things in the community as you can. You must include at least one animal species and one plant species. (Provide pictures if possible.)
- C. Describe the abiotic factors that impact the environment. You must be complete and detailed in how they impact.

Part II: Describe how the ecosystem took shape

- A. Use ideas of succession to describe where your ecosystem is in the process.
 - i. What evidence do you have to support your claims? What types of species are present? What is the environmental history of this area?
 - ii. What do you expect to happen in the future? Why?

Part III: Pick two easily identifiable populations within your ecosystem (one plant and one animal) and describe the demographics.

- A. Estimate population size. Describe your method of data collection and show your data. Do you expect this population data to change? Why?
- B. Suggest what limiting factors are influencing the growth of these populations. Are these factors density dependent or density independent?
- C. What patterns of dispersion do you observe? How would you explain these observed patterns.
- D. Are your populations r-selected or K-selected? Why?
- E. Do your populations show a type I, II, or III survivorship curve? Provide evidence of your assertion.

Part IV: Describe any clearly identifiable niches that are being filled in the ecosystem and discuss specific species interactions.

A. Pick two easily identifiable populations (one plant and one animal), and describe their niches. What habitat role do they fill? What resources do they use and/or provide?

B. What interactions between species can be observed in the community? Find and document examples of these interactions.

C. Is there any evidence of resource partitioning within your ecosystem?

D. Are there any species you would identify as a keystone species? How do you expect it fill this role?

E. Are there any obvious invasive species? What impact are they having?

F. Is there any evidence of coevolution?

G. What are some examples of cryptic coloration and aposematic coloration?

H. What are examples of mimicry in your ecosystem?

Part V: Develop a food chain for your ecosystem.

A. Identify the producers, primary consumers, secondary consumers, tertiary consumers, and decomposers.

B. Create a graphic representation of the flow of energy through your system. Attempt to compile data to show a corresponding pyramid of numbers.

C. How would you expect biological magnification to impact this ecosystem?

Part VI: Illustrate two nutrient cycles

A. Using specific organisms from your ecosystem, illustrate two nutrient cycles and explain what role the organisms play in the cycles.

Part VII: Human impact

A. Identify and give evidence of two specific examples of human impact on your ecosystem.

B. Discuss how these impacts are changing the ecosystem and what the long term effects may be. Also, suggest ways to reduce this impact.