

AP Biology Summer Assignment 2024- 2025

This summer you will prepare a project based on ecology topics that is due on the first day of class in September. It will be worth 1 test grade. Your grade will be based on *paraphrased and thorough explanations, clarity, appropriateness of pictures/diagrams, and your reference list*. Information that you get from your text or any other source must be paraphrased and not copied. Do not include direct quotations. Do not use AI of any sort. Photos taken from the internet must be cited as well.

-Please submit a visually interesting yet factual **journal** that includes your work. You may provide a poster for parts B and C.

Part A Many biologists are field biologists who work outside in nature. For this part of the project you will be a field biologist. During your vacation look for an example of a plant that belongs to each of the following divisions. They can likely be found in your backyard. If you are visiting national or state parks during the summer you may not be able to remove any plant material so be careful if you are traveling.

Supply a **plant press** of each of the following plants. This means you need to find the plant and take a piece of it that allows identification. Place it in between pieces of newspaper and flatten between two heavy objects for several days. Remove when it has dried out and is totally flattened. Attach the flattened plant into your journal and label it with its division and its common name.

- a. Division Bryophyta
- b. Division Pterophyta
- c. Division Coniferophyta
- d. Division Anthophyta- include one monocot and one dicot

1. **Describe** each division's defining characteristics.
2. Pick **one** of these plants and **describe** the biome in which this plant is naturally found. Include both biotic and abiotic features.
3. **Define** a population.
4. **Define** density-dependent and density-independent factors that can affect population size. **Identify** an example of each using your plant as an example.
5. **Define** a community **and describe 5** other members of the community that live alongside this plant.
6. **Define an** ecological niche and **describe** your plant's ecological niche in 5 different ways.
7. **Define** a cladogram and supply a picture of a simple cladogram that shows the evolution of the plant kingdom. **Identify** the characteristics on the cladogram that led to the separation of each of the divisions.

Part B Construct a food web that includes photos of your plant and at least 9 other organisms that are found in the biome you identified in Part A. You should have at least 10 organisms (representing a variety of different classes of plants and animals as appropriate) with their interrelationships clearly identified. These will most likely include some combination of producers as well as primary, secondary, and tertiary consumers. After preparing your food web answer the following:

- 1. Define** primary, secondary, and tertiary consumers as well as producers and decomposers.
- 2. Define** gross primary productivity, net productivity, and respiration and **explain** how net productivity changes with each level in the food web. You may include a diagram if you wish.
- 3. Describe** one environmental issue that affects the community in your food web in some significant way. **Describe** the source of this problem, how it affects the structure or stability of the biome, and how the issue can be resolved or avoided.

Part C.

- 1. Define** an invasive species. **Identify** one invasive species and provide a photo. **Describe** how it interferes with the natural community structure. You can use a community different from the one you described in Part A.
- 2. Define** a keystone species. **Identify** a keystone species and provide a photo. **Describe** its role in the community. You can use a community different from the one you chose in Part A.

General notes and information: Please include a **reference list with appropriate documentation**. This includes any source you used, whether it was a book or a website. Do not use Wikipedia as a source. If you have any questions please email me at: amorrissey@achs.net

While you can find information online for this project you can also access your text for information. If this course ID does not work please email me.

Text:

Urry, L (2018). Campbell Biology AP Edition, 12th ed. Boston: Pearson.

Pearson course ID: morrissey84389