



## Welcome to A.P. Biology!

The purpose of this letter is to assign the summer work that will be expected of all A.P. Biology students. These readings serve to introduce some core topics of biology and provide a basic understanding of some of the detailed topics we will encounter next year. I am thrilled to have you in my class, and even though AP Biology will be a great deal of work, it will be fun and provide you with endless benefits. You will be more aware of the biological world around us.

### **Summer Reading Assignment due August 31 (first day we meet)**

You have a ton to learn before your exam in early May. Because we have so much to do in a short amount of time, you need to do some summer reading to hit the ground running in September. You will have a test the first week of school on Ecology. PLEASE do this sooner rather than later or at least pace yourself. A job done on the last day of August is not a good job that will do your learning justice. You want to start out the course with as many points as possible. Late work is not accepted.

#### **Complete the following:**

- You need to check out your book from the office the last 3 weeks of school. This is advisable because you will burn your eyeballs reading online! Regardless, I need you to register for online access. The directions are on the next page.
- Suggested:** Purchase *Cliffs AP Biology* review book (5th edition) by Phillip E. Pack (from amazon.com or your local book store).
- Email me at [stephense@issaquah.wednet.edu](mailto:stephense@issaquah.wednet.edu)** with subject line AP Biology Summer 2021 by **July 1** from your personal email address.
  - a. You should have your own email address (email used for school should **have your name** in it).
  - b. You should be able to access your email almost anywhere
  - c. I might send links to important updates. It gives us an avenue to discuss questions from lecture or class data from laboratory activities. Email allows for a necessary TEAM approach to learning AP Biology effectively.
- 2) We will need to get your registered for the online textbook. Canvas makes this so we can't really do this until September, so we will deal with that then.



3. Why do we have seasons? Draw to support your answer. Is the earth closer to the sun in the summer?
4. What are the biomes? How can you use the information in number 2 to predict where you find each biome?
5. In your own words describe the terms in figure 40.11.
6. What is the difference between a wetland and an estuary? Why are they important environmentally and geologically?
7. Compare and contrast biotic and abiotic factors.
8. If you move the pygmy monkey to a new area in Papua New Guinea and it establishes and thrives what is this an example of? Be specific and describe.

9. What is a thermocline?

10. READ and summarize the inquiry on page 831. Answer the “what if” at the bottom of the box.

11. What is the difference between density and dispersion? What are the 3 types of dispersion?  
Which dispersion pattern is typically associated with territoriality?

12. Make a memory devise to remember immigration vs. emigration:

13. Draw the survivorship curve diagram.

14. How do you interpret a reproductive or life table?

15. What is K and where is it on a population graph? What is r and what is it shaped like?

16. Write the logistic growth model (formula)  $dN/dt=$

You must know this. Why is it shaped the way it is?

17. What is K-selection? Why the K? What is a K-selected species? Flip back to 40.16. Which line represents the K species?

18. What is r-selection? Why the r? What is a r-selected species? Which line represents the r species?

19. Compare and contrast density dependent and density independent limiting factors.

20. What are reproductive trade-offs? What is an example of one?

**Chapter 41** Read the questions. Read the chapter. Then and only then answer the questions. Make note of anything that is unclear. Draw a honey badger in the margins... just checking to see if you are really reading this 😊.

1. Complete this chart thoughtfully..... (last 2 columns are for effect on organism +/-/0)

	description	example	Organism 1	Organism 2
competition				
predation				
herbivory				
parasitism				
mutualism				
commensalism				

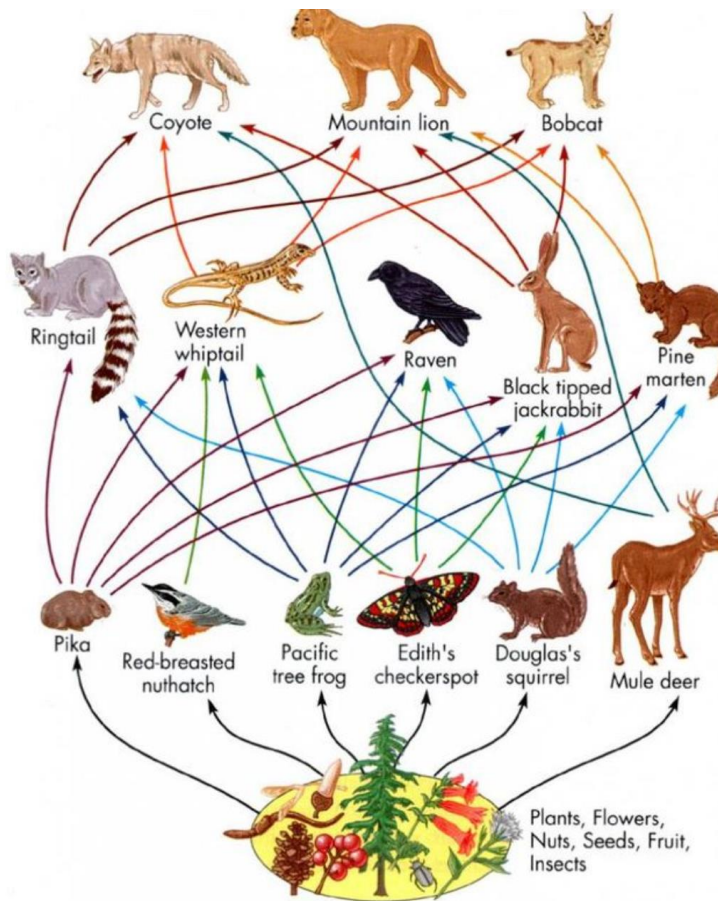
2. How can the niche concept be used to explain resource partitioning?

3. Go to the google. Look up an example of resource partitioning that is not the example in the book. Describe. Cite.

4. What is character displacement?

5. What is aposematic coloration?
  
6. Compare and contrast Batesian and Müllerian mimicry.
  
7. What is the difference between species diversity, species richness and relative abundance? If you are studying a delicate and endangered ecosystem, which should you focus on?
  
8. In a habitat, if species A makes up 70%, B is 10%, C is 7% and D is 3%, set up and compute the Shannon diversity index.
  
9. In the ocean seaweed grows, urchins eat it, otters eat the urchins, a hungry orca eats the otter. Draw a food chain. Make the arrows go in the correct direction. Label them with their role (the terms in the boxes in Figure 4.13).

10. Label the primary producers in this diagram with 1P, primary consumers 1C, secondary consumers 2C... etc. If an organism is more than one, make sure to label it as both.



11. How do you know the difference between a dominant species, keystone species and ecosystem engineers?

12. If a system is controlled by the bottom of the trophic system, this is called a \_\_\_\_\_ . An example of this is:

13. If a system is controlled by the top of the trophic system, this is called a \_\_\_\_\_ . An example of this is:



14. What effect does disturbance have on diversity? What level of disturbance is thought to produce more diversity?

15. Primary and secondary succession will come up throughout the year. How do you distinguish them? How do early species facilitate the arrival of other species?

16. You are now a contestant on the Amazing Race. What latitude will you go to if you are to find the most species diversity? Why does that diversity exist there (give at least 3 good reasons)?

17. What is evapotranspiration? What variables shape it? According to figure 41.21, what happens as evapotranspiration increases?

18. It turns out the islands are awesome models for studying terrestrial immigration and emigration. What two variables determine island colonization?

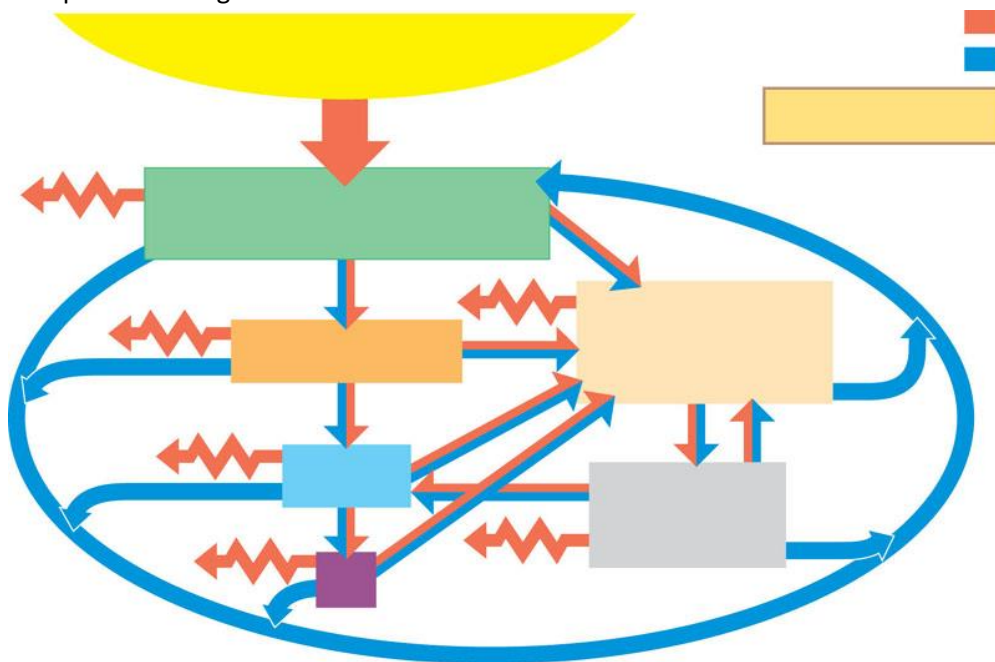
19. Define pathogen, zoonotic pathogen and vector.

**Chapter 42** Read the questions. Read the chapter. Then and only then answer the questions. Make note of anything that is unclear. What is your favorite food? Tell me in the margins, please. You are half-way done! You the person!

1. What is an ecosystem and why would we study energy flow in relation to the ecosystem?

2. This is Biology! Why do you gotta know the Law of Conservation of Mass?!

3. Complete this diagram:



4. What is the difference between a detritivore and a decomposer?

5. What are GPP and NPP? How do you calculate NPP?

6. Why is only a small portion of solar energy that strikes Earth's atmosphere stored by primary producers? What is the "rule of thumb" for the amount of energy typically transferred from one trophic level to the next?
  
  
  
  
  
  
  
  
  
  
7. If a goat eats 352J and it defecates 92J, assimilates 70J and uses the rest for respiration, what is the goat's production efficiency? Show your work.
  
  
  
  
  
  
  
  
  
  
8. Sketch and briefly explain a biomass pyramid...
  
  
  
  
  
  
  
  
  
  
9. Briefly detail the water cycle. You can write this response or draw the cycle.
  
  
  
  
  
  
  
  
  
  
10. Briefly detail the carbon cycle. Write about & draw the cycle.

11. Briefly detail the nitrogen cycle. Write about & draw the cycle.

12. What are denitrification and nitrogen fixation?

13. Briefly detail the phosphorus cycle. Write about & draw the cycle.

14. What was the Hubbard Brook study? What was learned?

15. What is bioremediation?

16. What is biological augmentation?

**Chapter 43** Read the questions. Read the chapter. Then and only then answer the questions. Make note of anything that is unclear. Last chapter!!

1. There are 3 levels of biodiversity. What are they?
2. What is the difference between an endangered and a threatened species?
3. What are the two big reasons humans need biodiversity?
4. What are the 4 big threats to biodiversity? Explain and give an example of each.
5. When humans burn fossil fuels, what happens to air and water? Include the Hubbard Brook data.

6. What is an extinction vortex? Cite the case study.
7. A population of wild ox has 100 males and 75 females, but only 20 males and 50 females reproduce. Define all your terms and show your work to calculate effective population size.
8. What is a biodiversity hot spot?
9. How do zoned reserves provide economic incentives for long-term conservation of protected areas?
10. What was DDT? Why was it such a problem? Use a critical vocabulary term to explain the problem with DDT.
11. What is the difference between the greenhouse effect and climate change?
12. How has the growth of Earth's human population changed in recent decades? Answer in terms of growth rate and the number of people added each year.
13. What is an ecological footprint?
14. What is sustainable development?