

**West Springfield High School
Advanced Placement Biology 2009-2010
Summer Assignment**

Dear AP Biology Students and Parents,

I am pleased to have you as a member of AP Biology. This college-level course is a rigorous one and due to the amount of information we will need to cover during the school year, you are required to complete the following summer assignment prior to the first day of school. Do not panic! I know many of you have summer plans. This assignment will not consume your whole summer, but will require you to dedicate a portion of it to learning.

You are required to read six chapters on Ecology (CH. 50-55). Along with receiving a textbook for the summer, you will complete the Ecology Objectives packet (see attached). *All answers must be handwritten!*

This packet will be due on the first day of class. **A late packet will not be accepted.** You should be prepared for class discussion on the material, based on the readings. A comprehensive exam will be given shortly thereafter.

In addition to the ecology packet, you are required to email me (ann.wong@fcps.edu) by August 1, 2009 with the Subject line "AP Biology," introducing yourself and telling me why you signed up for this class. This way I will have your contact information, should I need to contact you with additional information. If you are unable to email me, you may call the school and leave a message for me there.

More information regarding the class will be given in the fall. I look forward to a productive and exciting school year! Please feel free to contact me at any time over the summer. See you next school year!

Sincerely,

Ms. Ann Lam Wong
AP Biology Teacher
ann.wong@fcps.edu

STUDENT NAME: _____

TEXTBOOK NUMBER: _____

Ecology Objectives – CH.50-55

Read Chapters 50-55 and answer the following objectives. **All answers must be in your own handwriting!**

Chapter 50 – An Introduction to Ecology and the Biosphere

1. Distinguish among the following:

Organismal ecology –

Population ecology –

Community ecology –

Ecosystem ecology –

Landscape ecology –

2. Describe the problems caused by introduced species and illustrate with a specific example.

3. List the four abiotic factors that are the most important components of climate.

1)

2)

3)

4)

4. Name three ways in which marine biomes affect the biosphere.

1)

2)

3)

5. Define the following characteristics of lakes:

- a. seasonal turnover –
- b. thermal stratification –
- c. photic zone –

6. Describe the major characteristics of the major terrestrial biomes:

- a. Tropical rainforest –
- b. Desert –
- c. Savanna –
- d. Chaparral –
- e. Temperate grassland –
- f. Coniferous forest –
- g. Temperate broadleaf forest –
- h. Tundra –

Chapter 51 – Behavioral Ecology

7. Distinguish between proximate and ultimate questions about behavior. Ask a proximate question and an ultimate question about bird song.

8. Define *fixed action patterns* (FAPs) and give an example.

9. Define *imprinting* and give an example.

10. Explain how genes and environment contribute to behavior. Explain what is unique about innate behavior.

11. Distinguish between *kinesis* and *taxis* and give examples.

12. Distinguish between *signal* and *pheromone* and give examples.

13. Explain how habituation may influence behavior.

14. Define *associative learning*. Distinguish between classical conditioning and operant conditioning.

15. Explain optimal foraging theory.

16. Define *inclusive fitness* and *reciprocal altruism*. Discuss conditions that would favor the evolution of altruistic behavior.

Chapter 52 – Population Ecology

17. Distinguish between density and dispersion of a population.

18. Describe conditions that may result in clumped dispersion, uniform dispersion, and random dispersion of individuals in a population.

Clumped –

Uniform –

Random –

19. Describe the characteristics of populations that exhibit Type I, Type II, and Type III survivorship curves, drawing each one as well.

Type I –

Type II –

Type III –

20. Compare the exponential model of population with the logistic model.

21. Explain how an environment's carrying capacity affects the per capita rate of increase of a population.

22. Distinguish between r -selected populations and K -selected populations and give examples.

23. Explain the difference between density-dependent factors and density-independent factors that affect population growth, giving examples of each.

24. Describe the history of human population growth.

Chapter 53 – Community Ecology

25. List the categories of interspecific interactions and explain how each interaction may affect the population densities of the two species involved.

26. State the *competitive exclusion principle*.

27. Distinguish between fundamental and realized niche and give examples.

28. Distinguish between Batesian mimicry and Mullerian mimicry.

29. Distinguish among parasitism, mutualism, and commensalism.

30. Distinguish between a food chain and food web.

31. Distinguish between primary and secondary succession, giving an example of each.

Chapter 54 – Ecosystems

32. Describe the fundamental relationship between autotrophs and heterotrophs in an ecosystem.

33. Define and compare *gross primary production* and *net primary production*.

34. Explain why energy is said to “flow” rather than “cycle” through an ecosystem.

35. Distinguish between primary and secondary production.

36. Distinguish among pyramids of net production, pyramids of biomass, and pyramids of numbers.

37. Explain why worldwide agriculture could feed more people if all humans consumed only plant material.

38. Name the four main processes that drive the water cycle.

1)

2)

3)

4)

39. Describe the nitrogen cycle and explain the importance of nitrogen fixation to all living organisms. Name three key bacterial processes in the nitrogen cycle.

40. Describe the phosphorous cycle. Why is this process important?

41. Describe the causes and consequences of acid precipitation.

42. Explain why toxic compounds usually have the greatest effect on top-level carnivores.

43. Describe the causes and consequences of ozone depletion.

Chapter 55 – Conservation Biology and Restoration Biology

44. Distinguish between conservation biology and restoration biology and give examples of each.

45. Describe some conflicting demands that accompany species conservation.

46. Explain the importance of bioremediation and biological augmentation of ecosystem processes in restoration efforts.