

AP BIOLOGY SUMMER ASSIGNMENT
2009

Welcome to AP Biology! This will be a very fun, exciting, fast paced year!
In order to get a head start there is a summer assignment.

1. Read *Campbell Biology* Chapters 50-55.

7th edition. (High School edition). Author: Neil Campbell, Jane B. Reece.
Publisher: Benjamin/Cummings Publishing Comp. Inc. Menlo Park, CA

ISBN 10- 0805367772

ISBN 13- 9780805367775

Complete the guided reading packet for the ecology unit. Pay close attention to the vocabulary terms.

2. Choose 1 of the supplemental books listed. For the book read, write a 2-3-page reflection. (12 font, double-spaced) If you have another selection, email me for approval.

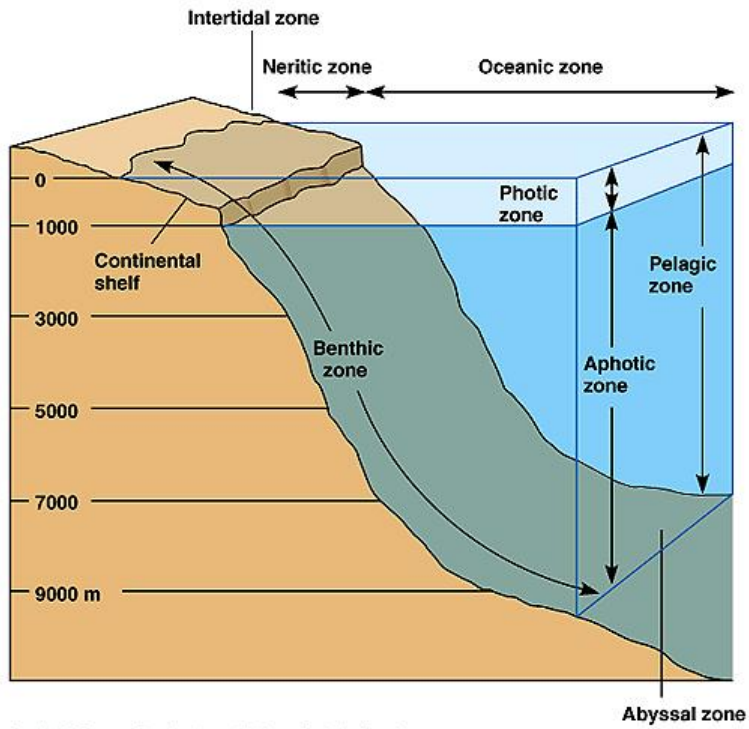
If you have any questions, please email me at tunickr@bishopireton.org or rosetunes@aol.com.

**Guided Reading packet and reflections are due Tuesday
September 8, 2009 in class.**

Summer Reading List Examples

Title	Author	ISBN
<i>The Pandalas Thumb: More reflections in Natural History</i> Or any book by Gould	Stephen J. Gould	0393300234
<i>Great Feuds in Science: Ten of the Liveliest Disputes Ever</i>	Hal Helleman	0471357847
<i>Ever Since Darwin: Reflections in Natural History</i>	Stephen J. Gould	0393308189
<i>Wonderful Life: The Burgess Shale and the Nature of History</i>	Stephen J. Gould	039330700X
<i>The Double Helix; a personal account of the discovery of the structure of DNA</i>	James Watson	074321630X
<i>Blueprints: Solving the Mystery of Evolution</i>	M.A. Edey and D.C. Johanson	0316210765
<i>Symbiotic Planet: A New Look at Evolution</i>	Lynn Margulis	0465072720
<i>Dinosaurs, Spitfires and Sea Dragons</i>	Christopher McGowen	067420770X
<i>In The Shadow of Man</i>	Jane Goodall	0618056769
<i>Reason for Hope: a Spiritual Journey</i>	Jane Goodall	0446522252
<i>On the Origin of Species</i>	Charles Darwin	0674637526
<i>The Growth of Biological Thought</i>	Ernst Mayr	0674364465
<i>The Double Helix: A Personal Account of the Discovery of the Structure of DNA</i>	James Watson	074321630X
<i>Rosalind Franklin & DNA</i>	Anne Sayre	0393320448
<i>Rosalind Franklin: The Dark Lady of DNA</i>	Brenda Maddox	0060985089
<i>The Monk in the Garden: The Lost and Found Genius of Gregor Mendel, the Father of Genetics</i>	Robin Marantz Henig	0618127410
<i>Timeline</i>	Michael Crichton	0345417623
<i>Prey</i>	Michael Crichton	0061015725
<i>State of Fear</i>	Michael Crichton	0066214130
<i>Next</i>	Michael Crichton	
<i>Deception Point</i>	Dan Brown	0671027387
<i>Hot Zone</i>	Richard Preston	0385479565
<i>Silent Springs</i>	Rachel Carson	0618249060
<i>Guns, Germs, and Steel: The Fates of Human Societies</i>	Jared Diamond	0393317552
<i>Collapse</i>		

6. Define the marine zones:



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7. Briefly describe the aquatic zones found on pages 1094-1097.

Lakes	
Wetlands	
Streams and Rivers	
Estuaries	
Intertidal Zones	
Oceanic Biome	
Coral Reefs	
Marine Zone	

8. Briefly describe the Terrestrial Biomes found on pages 1100-1103.

Tropical Forest	
Desert	
Savanna	
Chaparral	
Temperate Grassland	
Coniferous Forest	
Temperate Broadleaf Forest	
Tundra	

Chapter 51 Guided Reading

1. How do behavioral ecologists define behavior?

2. What is the focus of:
 - a. Proximate questions of behavior?

 - b. Ultimate questions of behavior?

3. Define the following terms:
 - a. Ethology
 - b. Fixed action pattern
 - c. Sign stimulus
 - d. Imprinting
 - e. Sensitive period
 - f. Innate behavior

4. Compare and contrast and give specific examples of kinesis and taxis.

5. What is the relationship between migration and genetic control?

6. How are the terms signal and communication related?

7. Describe and give three different examples of animal signals and communication.

8. What evidence is there that mating and parental behavior can be under genetic influence?

9. Define the following terms:

a. Learning

b. Habituation

c. Spatial learning

d. Cognitive map

e. Associative learning

f. Classical conditioning

g. Operant conditioning

10. Describe the classic experiment done by Tinbergen dealing with wasps. Why was this experiment considered important?

11. Specifically, describe what cognitive ethology studies.

12. Look up the definition of natural selection or review briefly the first chapter pages 15 – 18. Using this framework provide two different examples of the relationship between behavioral trait and natural selection. Why does this relationship “make sense”?

13. The statement can be made that “there are risks and benefits” to everything.” How does this relate to the optimal foraging theory?

14. What is generally the most important factor in the evolution of mating systems and why does this “make sense”?

15. What is agonistic behavior?

16. How does game theory relate to animal behavior?

17. Define the following terms:

a. Altruism

b. Inclusive fitness

c. Coefficient of relatedness

d. Kin selection

18. Is reciprocal altruism common in animals? Why or why not?

19. What is the relationship between social learning and culture?

Chapter 52 Guided Reading

1. Define the following terms:

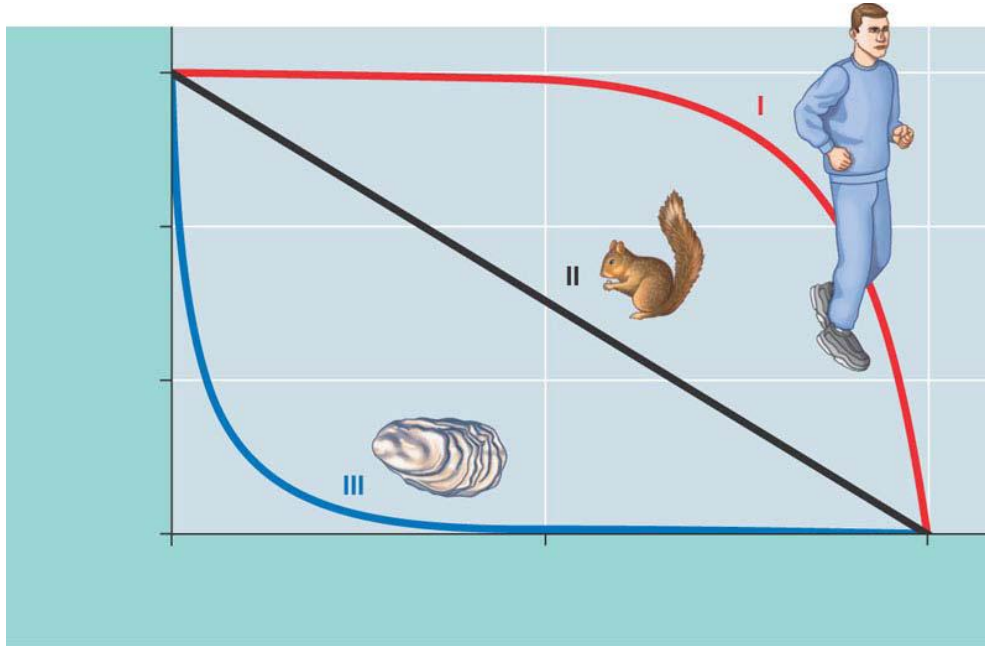
- a. Population
- b. Density
- c. Dispersion
- d. Mark-recapture method
- e. Immigration
- f. Emigration
- g. Territoriality

2. What are the three patterns of dispersion and what conclusions can you draw from these patterns?

3. Define the following terms:

- a. Demography
- b. Life tables
- c. Survivorship curves
- d. Reproductive table
- e. Life history

4. Use the diagram below – label the three different survivorship curves – give an example of an animal that fits the curve and an explanation of why they fit the curve.

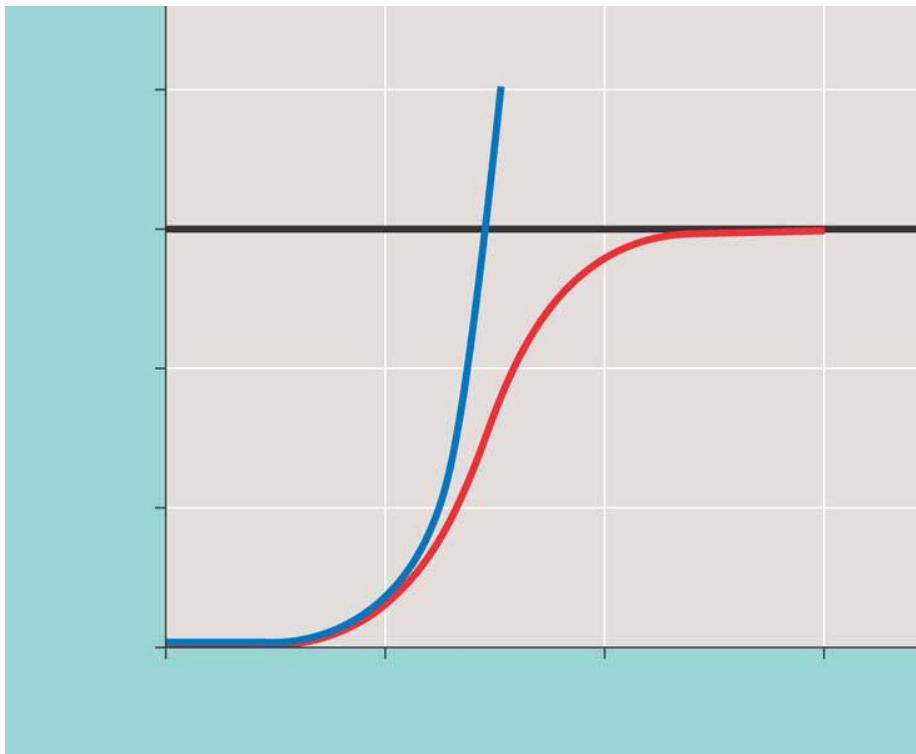


5. Compare and contrast semelparity and iteroparity – give advantages of each as they apply to an example organism – focus on the adaptive benefit of the life history. Are there any disadvantages? This is a core concept.

6. What is zero population growth?

7. What is exponential population growth? What kind of graph would you expect to see?

8. Read section 52.4 slowly – we are not focusing on all of the math but the concepts – explain the logistical population growth model. Studying the graph below – what does it tell you and why? How does “K” fit in to all of this?

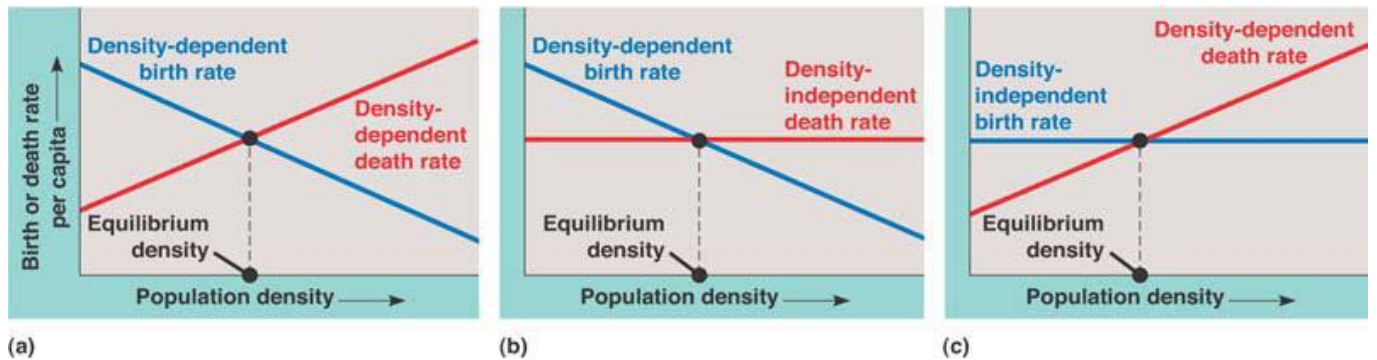


9. Compare and contrast r and k selection – this is a key concept – do some additional research and try to come up with at least six points of comparison.

10. What is the difference between density-dependent and density-independent

factors as a general term?

11. What generalizations can be made by the graphs below?



12. Describe six density-dependent factors in population regulation.

13. What is population dynamics?

14. Describe human population growth after studying figures 52.22 and 52.23.

15. What kinds of information do age structure pyramids provide and what inferences can be made from these?

7. Contrast the following terms:

a. Endoparasites

b. Ectoparasites

c. Parasitoids

8. Define and give two examples of mutualism.

9. Define and give two examples of commensalism

10. Is the evolution of Batesian mimicry an example of co-evolution, support your answer?

11. Provide an example that correctly uses the terms species diversity, species richness and relative abundance correctly.

12. What is the difference between a food chain and a food web? Which provides a more "full" ecological picture and why?

13. Write the terms and explain the two hypotheses that address the question as to why food chains are relatively short.

14. How do you characterize the dominant species? How is this different from the keystone species?

15. Compare and contrast the bottom-up model with the top-down model?

16. What is the relationship between the term disturbance and the intermediate disturbance hypothesis?

17. Compare and contrast primary and secondary succession.

18. Define evapotranspiration.

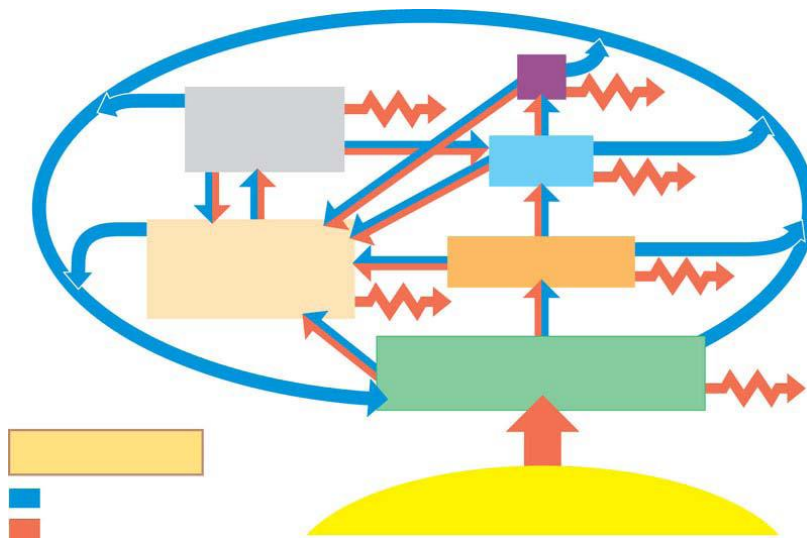
19. What is the Island Equilibrium Model and how does it help us better understand ecological changes?

20. What is the integrated hypothesis and how does it relate to the individualistic hypothesis?

Chapter 54 Guided Reading

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

2. Label the diagram below.



3. Why are detritivores essential to an ecosystem?

4. Define the following terms:

a. Gross primary production

b. Net primary production

5. How do light limitations and nutrient limitations impact primary production?

6. What is eutrophication and is it considered a “positive” for the a lake environment?

7. What impacts evapotranspiration?

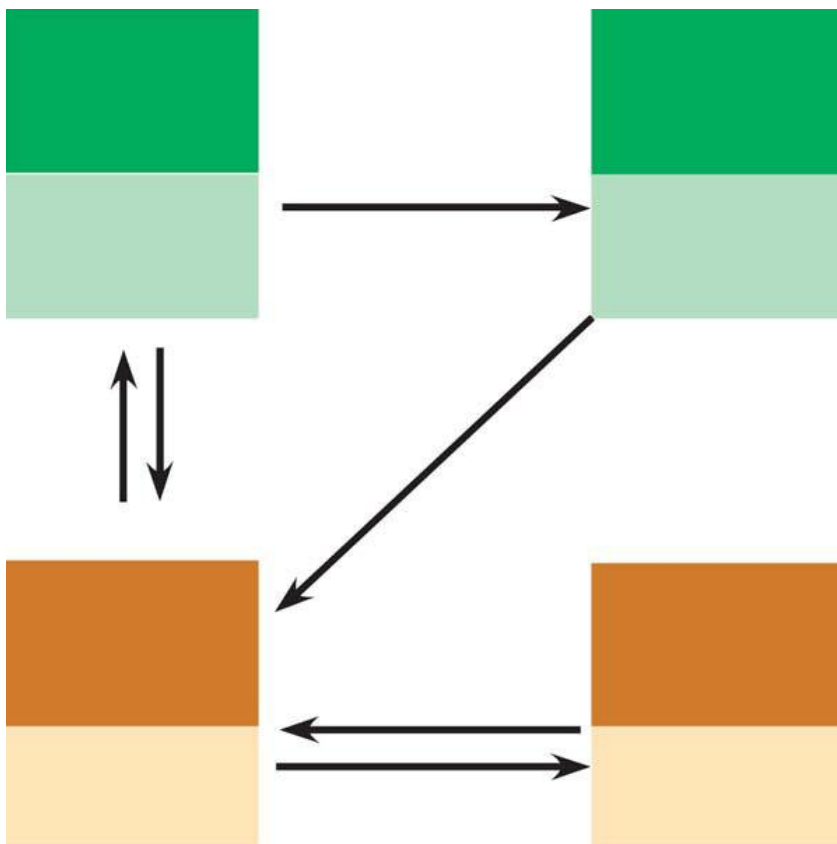
8. What is secondary production?

9. Why is the energy transfer between trophic levels limited?

10. What is the difference between production efficiency and trophic efficiency?

11. What is the green world hypothesis?

12. Complete the diagram below of the general model of nutrient cycling.



12. Briefly detail the water cycle. You can write this response or draw the cycle.

13. Briefly detail the carbon cycle. You can write this response or draw the cycle.

14. Briefly detail the nitrogen cycle. You can write this response or draw the cycle.

16. What is the difference between nitrification, denitrification, ammonification and nitrogen fixation?

17. Briefly detail the phosphorus cycle – you can write your response or draw a picture.

18. Imagine you are at the dinner table and are asked to explain what acid rain is and why it is a problem. Write your response here.

19. What is biological magnification and how does it relate to the health warnings given to pregnant women about the consumption of certain fish?

Chapter Ch. 55 Guided Reading

1. Explain why we currently face a “biodiversity crisis.”

2. Define the three levels of biodiversity.

3. Provide at least three benefits of maintaining a high level of biodiversity in the biosphere.

4. List ten services that ecosystems provide for us...free!

5. Explain how the following human-caused problems threaten biodiversity:

a. Habitat destruction

b. Introduced species

c. Overexploitation

d. Disruption of interaction networks.

6. Diagram the extinction vortex.

7. Contrast the “minimum viable population size” with the “effective population size.”

8. Pick one of the case studies presented in the first part of the chapter (greater prairie chickens, red-cockaded woodpeckers or grizzly bears). Explain why the population was threatened and how conservation efforts were aimed towards helping the struggling population.

9. Why is conservation always a compromise between the organism involved and human needs?

10. How do fragmentation and edges effect habitats?

11. Compare the nature reserve approaches utilized by the United States and Costa Rica.

12. What is the goal of Restoration Ecology?

13. Explain the concepts of “Bioremediation” and “Biological Augmentation.”

14. What are the goals of sustainable development?

15. What do you believe are the long-term prospects for humans and their interactions with the biosphere?

