

AP Biology Pre-Discussion Questions: Chapter 39- Behavior

Instructions:

- Open the presentation.
- Interact with it. Take notes as you wish.
- Self-Quiz 1: Answer the “Questions to answer”.
- Self- Quiz 2: Make sure you understand the “Things you should make sure you understand”.
- Feel free to view the “Supplementary Resources”.
- Write down any other questions that you have about the material.

Topic Presentation:

[Prezi](#)

[Behavior Notes](#)

Textbook Reading:

Chapter 39: pgs. 803 - 814:

Supplementary Resources:

Crashcourse Biology Videos:

[Animal Behavior - CrashCourse Biology #25](#)

[Ecology - Rules for Living on Earth: Crash Course Biology #40](#)

Videos by Paul Andersen:

[“Animal Behavior”](#)

[“Behavior & Natural Selection”](#)

[“Information Exchange”](#)

Questions to answer:

1. How does organismal behavior demonstrate an emergent property of an organism’s physiology?
2. Explain the difference between proximate and ultimate explanations for a particular behavior.

3. Why does behavior require communication?
4. Explain the difference between innate and learned behaviors?
5. Are there any limitations on the complexity of innate behaviors? If so, what are they?
6. Are there any limitations on the complexity of learned behaviors? If so, what are they?
7. How can natural selection act on innate and learned behaviors?
8. Why would an organism behave in a way that reduces its individual fitness?

Things you should make sure you understand:

(feel free to ask questions about them in class)

- Proximate and ultimate explanations for all behaviors discussed in this presentation.
- The processes and mechanics of communication among all lineages discussed in this presentation.
- The evolutionary explanation for the emergence of agonistic and altruistic behaviors.

AP Biology Pre-Discussion Questions: Chapter 40- Population Dynamics

Instructions:

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Topic Presentation:

[Prezi](#)

[Population Ecology Powerpoint](#)

Textbook Reading:

Chapter 40 - Population Ecology and the Distribution of Organisms

Supplementary Resources:

Crash Course Biology Videos:

[The History of Life on Earth - Crash Course Ecology #1](#)

[Population Ecology: The Texas Mosquito Mystery - Crash Course Ecology #2](#)

[Human Population Growth - Crash Course Ecology #3](#)

Videos by Paul Andersen:

[“r- and K- Selection”](#)

[“Communities”](#)

[“Ecosystems”](#)

Questions to answer:

1. What factors contribute to the increase/decrease of a population?
2. Compare the exponential and logarithmic models of population growth. Why are they useful

- models for studying real world populations? What are some of their limitations?
3. How does the mark-recapture method of estimating the size of a population work?
 4. Compare the three major ways that members of a population are distributed in the environment.
 5. What is demographics? Why is it useful for population biologists?
 6. Compare the three major survivorship curves that populations demonstrate.
 7. Discuss how reproductive strategy affects the structure of a population. Provide examples related to number of offspring, amount of parental care, and r-selection vs. K-selection.
 8. Discuss the effects of density-dependent factors on the structure of a population and provide examples.
 9. List relevant observations about the growth of the human population from a historical, and modern perspective.

Things you should make sure you understand:

(feel free to ask questions about them in class)

- How to use the exponential and logarithmic models of population growth.
- How to estimate population size using mark-recapture and quadrat sampling methods.
- Examples of organisms that demonstrate the modes of distribution, survivorship, and reproductive strategies discussed in this presentation.
- Examples of each of the density-dependent factors discussed in this presentation.

AP Biology Pre-Discussion Questions: Chapter 41 - Community Ecology

Instructions:

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Topic Presentation:

[Prezi](#)

[Community Ecology Powerpoint](#)

Textbook Reading:

- Chapter 41 - pages 845-863

Supplementary Resources:

Crashcourse Biology Videos::

[Community Ecology: Feel the Love - Crash Course Ecology #4](#)

[Community Ecology II: Predators - Crash Course Ecology #5](#)

[Ecological Succession: Change is Good - Crash Course Ecology #6](#)

Videos by Paul Andersen:

[“Niche”](#)

[“Communities”](#)

[“Coevolution”](#)

[“Ecological Succession”](#)

[“Biodiversity”](#)

Questions to answer:

1. Explain how competition contributes to competitive exclusion, resource partitioning, and

character displacement.

2. Explain how predation contributes to changes in coloration (aposematic and cryptic) and the evolution of mimicry (batesian and mullerian).
3. Provide examples of mutualism and parasitism, and explain how your examples fit those definitions.
4. Why are ecologists unsettled on whether or not there are any truly commensal interactions among organisms?
5. Explain the concept of facilitation. Provide an example facilitator species and why it fits that definition.
6. What is biodiversity? How is it measured?
7. Explain how trophic structure can be understood in terms of food chains and food webs.
8. How do keystone species and energetic considerations contribute to the trophic structure of an ecosystem? Provide examples of the effects of each.
9. Describe the phenomena of disturbance and succession.
10. How do climate, area, and the island-like nature of an environment contribute to the structure of the community?

Things you should make sure you understand:

(feel free to ask questions about them in class)

- The details of all interactions discussed in this presentation and examples of each.
- How the interactions among members of a community can contribute to emergent properties in the ecosystem.
- How to calculate biodiversity of a community in terms of the shannon diversity index.
- The effects of community interactions on the trophic structure of a community.
- The effects of energetic and environmental factors on the trophic structure and the diversity of a community.
- How disturbance and succession specifically function to structure a community.

AP Biology Pre-Discussion Questions: Chapter 42- Ecosystems and Energy

Instructions:

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Topic Presentation:

[Prezi](#)

[Ecosystems Notes](#)

Textbook Reading:

Chapter 42: pages 864 - 879

Supplementary Resources:

Crashcourse Biology Videos:

[Ecosystem Ecology: Links in the Chain - Crash Course Ecology #7](#)

[The Hydrologic and Carbon Cycles: Always Recycle! - Crash Course Ecology #8](#)

[Nitrogen & Phosphorus Cycles: Always Recycle! Part 2 - Crash Course Ecology #9](#)

Videos by Paul Andersen:

[“Ecosystems”](#)

[“Biogeochemical Cycling”](#)

[“Ecosystem Change”](#)

Questions to answer:

1. What are the major factors that determine the terrestrial ecosystem that exists in a particular

- location?
2. What are the major factors that determine the marine ecosystem that exists in a particular location?
 3. How does the first law of thermodynamics effect the movement of matter and energy through an ecosystem?
 4. Explain what limiting factors are and how they influence the productivity of an ecosystem.
 5. Explain the “10% rule”, how it affects the trophic structure of the ecosystem, and why it is a bit of an oversimplification.
 6. Explain what all nutrient cycles have in common.

Things you should make sure you understand:

(feel free to ask questions about them in class)

- How all planetary and cosmological systems described in this presentation contribute to climate.
- The major characteristics of all terrestrial and marine ecosystems described in this presentation and rough locations of them on the Earth.
- How to use the 10% rule to estimate productivity, and trophic efficiency of a particular ecosystem.
- The specific processes at work in the water, carbon/oxygen, nitrogen, and phosphorous nutrient cycles.

