**Chapter 6 Reading Guide**

**Vocabulary**

**Module 18**

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| 1. Population | 2. Community | 3. Population Ecology | 4. Population Size (N) |
| 5. Population Density | 6. Population Distribution | 7. Sex Ratio | 8. Age Structure |
| 9. Limiting Resource | 10. Density Dependent Factor | 11. Carrying Capacity | 12. Density- Independent Factor |

**Module 19**

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| 1. Population Growth Models | 2. Population Growth Rate | 3. Intrinsic Growth Rate (r) | 4. Exponential Growth Model |
| 5. J-shaped Cure | 6. Logistic Growth Model | 7. S-shaped Curve | 8. Overshoot |
| 9. Die-off | 10. K-Selected Species | 11. R-Selected Species | 12. Survivorship Curves |
| 13. Type I Survivorship Curve | 14. Type II Survivorship Curve | 15. Type III Survivorship Curve | 16. Corridor |
| 17. Metapopulation | 18. Inbreeding Depression |  |  |

**Module 20**

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| 1. Community Ecology | 2. Symbiotic Relationship | 3. Competition | 4. Competitive Exclusion Principal |
| 5. Resource Partitioning | 6. Predation | 7. Parasitoid | 8. Parasitism |
| 9. Pathogen | 10. Herbivory | 11. Mutualism | 12. Commensalism |
| 13. Keystone Species | 14. Ecosystem Engineer |  |  |

**Module 21**

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| 1. Ecological Succession | 2. Primary Succession | 3. Secondary Succession | 4. Pioneer Species |
| 5. Theory of Island Biogeography |  |  |  |

**Module 18**

1. *Opening Story* - What happened after the New England farmland was abandoned, and what does this demonstrate?
2. This module will focus on populations. What defines 'a population', and how is it different from a community?
3. How does the opening story demonstrate the importance of community-level analysis of ecology?
4. When considering a population as a system, what 2 processes are inputs that increase population size and what 2 processes are outputs that decrease population size?

Input 1 (+): Output 1 (-):

Input 2 (+): Output 2 (-):

1. Why is it important to know the population sex ratio and age structure?
2. How can increasing population density act to limit that population's growth?
3. How do density-dependent and density-independent factors affect a population's size? Provide examples of each.
4. What are typical limiting resources for plants? For animals?
5. What is the relationship between limiting factors for a population and its environment's carrying capacity?

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**Module 19**

1. What does the intrinsic growth rate of a species measure? How does it vary among species? (consider r/k selection,etc)
2. What occurs in logistical growth when a growing population approaches the carrying capacity?
3. Can populations exceed carrying capacity in the short term? In the long term? What happens if they do?
4. In Figure 19.4, why doesn't the population stay steady at the level of the carrying capacity?
5. How do predator-prey dynamics influence the populations of BOTH predators and prey? Consider Figure 19.5
6. Which types of species are better able to survive environmental change - r- or k-selected? Explain.
7. How do r- and k-selection influence survivorship curves?
8. What is a metapopulation, and why is it important to study them?
9. *Science Applied - How can human action cause some species to become overabundant, and why can this be harmful?*
10. *Science Applied - How can we control overabundant populations? How might options differ in urban vs rural areas, or wealthy countries vs poor ones?*

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**Module 20**

1. How did Gause's experiments with paramecia demonstrate the competitive exclusion principle of competition?
2. Why is resource partitioning advantageous for species that would otherwise compete for the same realized niche?
3. Identify each of the following as an example of (1: **the competitive exclusion principle**), (2: **temporal resource partitioning**), (3: **spatial resource partitioning**) or (4: **morphological resource partitioning**):
   * 1. Several species of birds hunt insects in the same type of tree, but each feeds in a different part of the tree .
     2. When wolves absent, Yosemite's deer overgrazed many plant species and drove out other herbivores.
     3. Many different species of bats use a single watering hole, but each at different times.
     4. Different species of butterfly have tongues of varying lengths, each specialized to different flower shapes.
     5. Invasive species that out-compete native species for key resources often drive the native species extinct.
4. What types of strategies have prey animals evolved to resist predation?
5. Under what conditions would natural selection favor mutualism between two species?
6. How could an ecologist identify a keystone species in any given ecosystem?
7. Why are sea stars and beavers considered to be keystone species in their habitats?
8. In Figure 20.12, why did the absence of one single species (starfish) cause overall species richness to drop so much?
9. *Working Towards Sustainability -* What does the story of the black-footed ferret illustrate? Why is it important?

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**Module 21**

1. Describe the process in which bare rock is converted to soil in primary succession, and the species involved.
2. Where do the mineral and organic components of the new soil come from?
3. What role do mid-successional species such as grasses and wildflowers play in transforming soil?
4. Why do mid-successional species eventually get displaced by late-succession species?
5. True/false: the number of species present always increases as succession proceeds.

True/false: The Opening Story describes a sequence of primary succession

True/false: In the Opening Story, Goldenrods are late-successional species

1. How does secondary succession differ from primary succession?

7. What are some similarities between the progression of species in BOTH primary and secondary succession?

1. Why has the use of the term *climax stage* fallen out of favor among scientists?

9. Where/howdoes succession occur in the rocky intertidal zone of the Pacific Coast?

1. Describe how lakes become filled in during aquatic succession.

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**Chapter 6 Practice Exam (pg 221)**

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