Community Ecology Study Guide

- To be filled out while viewing the lecture (parts 1 and 2) and reading the assigned text.

Learning Objectives

- Describe and give examples of the main types of interactions in a community (mutualism, commensalism, predation, parasitism, competition (inter- and intra-specific).
- Describe/define the difference between a population and a community.
- Understand what it means to exploit a niche in the community.
- Recognize predators, prey, parasites etc, as well as the variety of predator and prey adaptations discussed in your assigned reading (i.e. mimicry, warning coloration, camouflage, etc).
- Understand what resource partitioning entails.
- Describe several mechanism prey can use to avoid predators (mimicry, camouflage etc.) and understand what is meant by the term “co-evolution”.
- Describe forces that make a community stable and unstable.
- Know the differences between primary and secondary succession, the types of pioneer species that might be associated with each, and types of disturbances that would be responsible for each.
- Be prepared to discuss why primary succession is typically a much longer process than secondary.
- Know all the important characteristics that define a well suited pioneer species.

Key Terms

Invasive species	interdependence	community	competitive exclusion
prey density	Batesian mimicry	species richness	resource partitioning
camouflage	Mullerian mimicry	social parasites	interspecific competition
startle coloration	facultative mutualism	climax community	intraspecific competition
primary succession	pioneer species	keystone species	obligatory mutualism
host	parasite	predator	prey
climax community	secondary succession	niche	co-evolution
parasitoid	commensalism	keystone species	intermediate disturbance hypothesis

Part 1: Community Interactions

1. What does the concept of ecological community consist of i.e. what defines it?

2. List four types of interactions that can occur in a community.
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3. Fill out the following table from the lecture and assigned reading:
   + means helpful, - means harmful

Type of Interaction	Effect on Sp 1	Effect on Sp 2	Example (from text)
Commensalism	+	0	Birds nesting in tree
Competition	-		
Parasitism		-	
Mutualism			

4. Define the concept of niche. How is a fundamental niche comparable to biotic potential?

5. _____ is when species that spend most or all of their life cycle in close association with each other. Give three different examples:
   a.
   b.
   c.

6. When does competition occur?

7. List the two different forms of competition and give an example of each.
   a.

   b.

8. When two species require the same limited resource to survive or reproduce, but ultimately only one is successful at obtaining it, this is called _____ (2 words).

9. Explain in your own words the experiments conducted by the famous microbiologist G. F. Gause, and how it demonstrates the concept of competitive exclusion.

10. What is meant by the concept of “resource partitioning?”

11. Explain how specializations in similar species could result in a subdivision of resources within a habitat and eliminate or minimize competition.

12. When species interact closely over extended periods and act as selective agents on each other this is referred to as: _____
    a. Can you discover some examples of the interaction you listed above?

13. What are some major differences between a parasite and a parasitoid?

a. After watching the YouTube video on Jewel wasps, explain why they are a parasitoid. (Search for zombie cockroach on Youtube.com, it is the first link that appears in the search results.(

b. Can you think of how co-evolution plays a role in this relationship as well?

14. The brown headed cowbird is considered a _____ species with bison, which means that one species benefits (the cowbird) from eating bugs that bison kick up in dust, but the bison were not helped nor harmed in that relationship.
    a. However, the same brown headed cowbird is considered a _____ _____ (2 words), with warblers, because the brown headed cowbird lays its eggs into the nest of warblers, these little yellow songbirds, then raise the big babies of the cowbirds instead of their own, so the warbler population is actually harmed.

15. Some interactions between two species in a community are obligatory. This form of mutualism is considered _____, such as the yucca plant and its specific moth species that is necessary for the yucca plant to complete its life cycle.

16. Describe the relationship clownfish and sea anemones share. How is it facultative?

17. Describe the relationship between barnacles and the humpback whale.

18. Define a keystone species.

    a. Read in your textbook (or do an internet search) about the sea star Pisaster ochraceous, seen in our tide pools right here on the Oregon coast. This sea star feeds in part on _____, therefore it is a predator. What happened when scientists removed the sea star from experimental sampling areas/pools?

19. Why do keystone species especially need to be protected?

Part 2: Ecological Succession

1. Succession is an important concept in ecology because it addresses _____ change in a community and its environment. This change occurs after some _____to the natural environment.

2. In your own words, define the following:

a. Pioneer species:

b. Climax community:

3. List several characteristics that make a successful pioneer species:
   a.
   b.
   c.
   d.

4. Define Primary Succession:

5. Under what conditions might an area experience community changes with primary succession? List what is demonstrated in lecture as well as new ideas that you may have or maybe have read about in your textbook.
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6. What type of plants first colonizes bare rock in the process of primary succession?

7. In contrast, what is secondary succession?

8. List several scenarios when secondary succession may occur to a disturbed area.
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9. What are some major differences that distinguish primary succession from secondary succession?

10. Of the types of disturbances listed on slide 8 of the lecture, which are caused by human activities?

11. In your own words, explain the intermediate disturbance hypothesis.

12. What type of disturbance, in terms of frequency and intensity, leads to the highest biodiversity in an ecosystem?