**Community Ecology – Reading Questions**

1. Fill in 5 key events in the re-establishment of the New England forest in the Opening Story:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1. Farmers begin leaving | 2. | 3. | 4. | 5. | 6. | 7. Broadleaf forest re-established |

1. Distinguish between each level of analysis:

|  |  |  |
| --- | --- | --- |
|  | What does this level consist of? | What do scientists study at this level? |
| Individual |  |  |
| Population | All the individuals of a single species living in a given area at one time |  |
| Community |  |  |
| Ecosystem |  | Flows of energy and matter or a large scale (ex: the cycling of C/N/P/H2O in a lake) |
| Biosphere |  |  |

1. Which level of analysis would be most appropriate for a scientist to use in each scenario?
   * 1. Monitoring the Grey Wolves of Yosemite
     2. Investigating the connections among organisms in a soil sample
     3. Determining whether or not natural selection favors light or dark coloration in mice
     4. Evaluating the status of the Florida Everglades
2. How does the Opening Story demonstrate the importance of community-level analysis and interactions between species?

**Interspecies Interactions**

1. Competition
   1. Why did Gause’s experiment growing 2 strains of paramecium in the same environment produce a different outcome from when they he grew them separately?
   2. Why can’t two species simultaneously share the same realized niche?
   3. Why is resource partitioning advantageous for species that would otherwise be competing?
   4. Identify each of the following as an example of the competitive exclusion principle, temporal resource partitioning, spatial resource partitioning or morphological resource partitioning:
      1. Several species of Warbler Birds hunt insects in the same types of trees, but each feeds in a different part of the tree
      2. When wolves were absent from Yosemite, deer grazed many plant species so heavily that other herbivore species were unable to establish themselves
      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 the shape of the flowers produced by the plants it feeds on
      5. Invasive species that out-compete native species for key resources often drive the native species to extinction
2. How do a species’ range of tolerance for various conditions determine its fundamental niche? (***Ch. 5, pp. 134-135***)
3. Why don’t species always use their full fundamental niche? (***Ch. 5, pp. 134-135***)
4. What are some of the major differences between niche generalists and niche specialists? (***Ch. 5, pp. 134-135***)
5. Predation
   1. List 2 distinguishing characteristics of each type of predation:

|  |  |  |
| --- | --- | --- |
|  | **Characteristic 1** | **Characteristic 2** |
| **True predators** |  |  |
| **Herbivores** |  |  |
| **Parasites** |  |  |
| **Parasitoids** |  |  |

1. Mutualism
   1. Under what conditions would natural selection favor mutualism between two species?
   2. True/false: In a mutualistic relationship, neither species evolves traits suited to helping the other
   3. Which of the following are mutualistic: (Lichens) (Viruses) (Coral) (Acacia trees) (African lions)
2. Commensalism
   1. True/false: In commensalism, both species benefit
3. Keystone Species
   1. How could an ecologist identify a keystone species in any given ecosystem?
   2. Why are sea stars and beavers considered to be keystone species in their habitats?
4. Primary Succession
   1. Which types of organisms transform bare rock in to young soil?
   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.
5. Secondary Succession
   1. How does secondary succession differ from primary succession?
   2. How is the progression of species in secondary succession similar to that of primary succession?
   3. Why has the use of the term *climax stage* fallen out of favor among scientists?
   4. True/false: The Opening Story describes a sequence of primary succession
   5. True/false: In the Opening Story, Goldenrods are late-successional spcies
6. Aquatic Succession
   1. On which surfaces does succession occur in the rocky intertidal zone of the Pacific Coast?
   2. Describe how are lakes can become filled in during aquatic succession:
7. Species Richness, Latitude, Time, Theory of Island Biogeography

|  |  |  |
| --- | --- | --- |
|  | **Influence of this factor on species richness?** | **What do you think causes this?** |
| Latitude |  |  |
| Time | The *older* a habitat, the *greater* its species richness is likely to be; *younger* habitats have *lower* species richness |  |
| Habitat Size |  | *Larger* habitats present *more* niches; *smaller* habitats offer *fewer* resources |
| Distance from other habitats |  |  |

**Community Ecology - Vocabulary List**

|  |  |  |
| --- | --- | --- |
| **TERM** | **DESCRIPTION** | **EXAMPLE** |
| Population - |  |  |
| Community - |  |  |
| Competition - |  |  |
| Competitive exclusion principle - |  |  |
| Resource partitioning - |  |  |
| Predation - |  |  |
| Herbivores - |  |  |
| Mutualism - |  |  |
| Commensalism - |  |  |
| Symbiotic relationship - |  |  |
| Keystone species - |  |  |
| Ecological succession - |  |  |
| Primary succession - |  |  |
| Secondary succession - |  |  |
| Pioneer species - |  |  |
| Fundamental Niche |  |  |
| Realized Niche |  |  |
| Generalists |  |  |
| Specialists |  |  |