



Concepts of Population Ecology

Answer Key

1. **Answer:** C

Explanation: Species with Type III survivorship often produce numerous offspring but provide little to no care for them. For example, some fishes spawn many eggs and sperm into the water but most of the fertilized and resulting larvae die from predation or other causes.

2. **Answer:** C

Explanation: In random dispersion, individuals are spaced in an unpredictable manner and so there is no pattern. Plants may become randomly dispersed when their seeds go with the wind. However, varying habitat conditions and social interactions make random dispersion rare.

3. **Answer:** D

Explanation: Two important factors are important in shaping a population: density and dispersal. Population density refers to the number of individuals of a species per unit area. Because it is impractical or impossible to count all individuals in a population in most cases, ecologists use various sampling techniques to estimate the population densities. Dispersal or the dispersion pattern of a population refers to the way individuals are spaced within an area.

4. **Answer:** A

Explanation: Life tables are used to construct survivorship curves, which plot survivorship as the proportion of individuals from an initial population that is alive as they age.

5. **Answer:** A

Explanation: A Type I survivorship curve shows that most individuals survive to an older age. Humans and other large mammals usually show this curve as even though we produce few offspring, we take good care of them such that they are able to live to maturity.



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6. **Answer:** B

Explanation: K-selection occurs in large-bodied, long-lived animals and for comparable plants such as the coconut, which produce relatively few seeds that are well-stocked with nutrients. The hypothesis for this selection occurs in environments where the population size is near carrying capacity. K-selected organisms are adapted to environments with a relatively stable climate and little opportunity for rapid population growth.

7. **Answer:** C

Explanation: The exponential growth model is one idealized model that gives a picture of unlimited population growth. It has no restrictions on how organisms live, grow, and reproduce.

8. **Answer:** A

Explanation: Sustainable resource management practices allow the use of a natural resource without damaging it. In terms of our living resources, it means maintaining a high population growth rate to replenish the resource.

9. **Answer:** B

Explanation: A limiting factor whose intensity is not related to population density is called a density-independent factor. For example, the weather may affect population size long before density-dependent factors become important. This is also why habitat disruption by human activity is a problem as it affects populations regardless of their densities.

10. **Answer:** C



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Explanation: Ecological footprint is an estimate of the land and water area required to provide resources an individual or a nation consumes and to absorb the waste it generates.



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