

CHAPTER 54: Population Ecology

1. Describe how humans have tried to control populations in Australia.

2. How can an ecologist estimate the numbers of individuals in a population?

3. What are some possible difficulties in counting populations?

4. What is shown by the life table on page 1170?

5. Compare the three survival strategies (survivorship curves) and give an example of each:

- _____
- _____
- _____

6. Write the formula for population growth without limits. Define each of the terms. What type of growth is this called?

7. Define carrying capacity (K).

8. Write the formula for population growth with limits. Define each of the terms. What type of growth is this called?

9. What happens to a population when the number of individuals approaches carrying capacity?

10. Compare K-selected to r-selected species. Give an example of each.

11. Identify factors that regulate population size.

12. Compare density-independent and density-dependent factors limiting populations.

13. How would you characterize human population growth?

14. Have humans reached K? What factors are significant when explaining our growth curve?

15. Why are some species more common than others?

16. What is the significance of a social structure towards population density?

17. Why does an introduced species new to an environment sometimes have a population explosion?

18. Give an example of how distant events can influence local population densities,

19. What is a biological control? What are the dangers of using biological controls?

END OF CHAPTER 54 MULTIPLE CHOICE

1. The distribution of the ages of individuals in a population and the way those individuals are spread over the environment describes
 - A) population dynamics.
 - B) population regulation.
 - C) population structure.
 - D) subpopulation structure.
 - E) biomass distribution.

2. The age distribution of a population is determined by
 - A) the timing of births.
 - B) the timing of deaths.
 - C) the timing of both births and deaths.
 - D) the rate at which the population is growing.
 - E) all of the above

3. Which of the following is not a demographic event?
 - A) Growth
 - B) Birth
 - C) Death
 - D) Immigration
 - E) Emigration

4. A group of individuals born at the same time is known as a
 - A) deme.
 - B) subpopulation.
 - C) Mendelian population.
 - D) cohort.
 - E) taxon.

5. A population grows at a rate closest to its intrinsic rate of increase when
 - A) its birth rates are the highest.
 - B) its death rates are the lowest.
 - C) environmental conditions are optimal.
 - D) it is close to the environmental carrying capacity.
 - E) it is well below the environmental carrying capacity.

6. The process by which immigrants prevent a subpopulation from becoming extinct is called the
 - A) colonization effect.
 - B) rescue effect.
 - C) metapopulation effect.
 - D) genetic drift effect.
 - E) salvage effect.

7. Density-dependent factors have the greatest effect on population densities when
 - A) only birth rates change in response to density.
 - B) only death rates change in response to density.
 - C) diseases spread in populations at all densities.
 - D) both birth and death rates change in response to density.
 - E) population densities fluctuate very little.

8. A metapopulation is
 - A) an unusually large population.
 - B) a population that is spread out over a very large area.
 - C) a group of subpopulations among which some individuals move.
 - D) a group of subpopulations that are isolated from one another.
 - E) a group of subpopulations among which individuals move frequently.

9. The best way to reduce the population of an undesirable species in the long term is to
 - A) reduce the carrying capacity of the environment for the species.
 - B) selectively kill reproducing adults.
 - C) selectively kill prereproductive individuals.
 - D) attempt to kill individuals of all ages.
 - E) sterilize individuals.

10. Populations that are most readily overharvested are characterized by having
 - A) very long-lived adults.
 - B) short prereproductive periods and many offspring.
 - C) short prereproductive periods and few offspring.
 - D) long prereproductive periods and few offspring.
 - E) long prereproductive periods and many offspring.