Chapter 44 - Population Ecology

1. Define the terms associated with the scope of ecology. (p. 839)

   a. ecology - ________________________________
   b. habitat - ________________________________
   c. population - ________________________________
   d. community - ________________________________
   e. ecosystem - ________________________________

2. What is the central goal of modern ecological studies? (p. 839)

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3. Define demography. (p. 840)

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4. Describe the idea of limiting factors and provide a real life example. (p. 840)

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5. Illustrate the 3 types of distribution patterns of desert shrubs. (figure 44.2)

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6. What is the growth rate \((r)\) dependent upon? (p. 841)

7. Populations grow when the number of ______________ exceeds the number of ______________.

8. Calculate the growth rate if a population \((N) = 1000\) along with 20 deaths and 10 births.

9. What are 4 factors that influence an organism’s biotic potential. (p. 841)
   1. __________________________________________________________________________
   2. __________________________________________________________________________
   3. __________________________________________________________________________
   4. __________________________________________________________________________

10. Define survivorship. (p. 841)

11. Survivorship curves tells us a lot about a species’ reproductive strategy. For instance, type I curves usually indicate a species that produces fewer young. Sketch diagram 44.4a of these curves.

12. Would an organism with a type III curve be selected to produce more offspring or less offspring? Why? (p. 842)
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13. What can **age structure diagrams** tell us about population growth? (p. 842-843)

14. Describe **exponential growth** and the two phases.

15. Sketch figure 44.7.b of the exponential growth. **NOTE:** the equation in 44.7.c. is used to find the population number over **MULTIPLE** of time intervals. We use this formula instead: \( N(t) = (1 + r)^t \). If you want to find the **CHANGE** in a population over **ONE** time period, we use: \( \frac{dN}{dt} = rN \)
16. Describe **logistic growth** and its 3 phases.

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17. Sketch figure 44.8.b and c of logistic growth and its associated equation.

18. Define the term **carrying capacity**. What happens to the population growth as it approaches its carrying capacity? (p. 845)

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19. Describe the difference between **density-dependent** and **density-independent** factors. Provide an example for each using 44.9 and 44.10. (p. 846-847)

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20. Why do r-selected species tend to produce a lot of offspring? (p. 849)

21. Why are r-selected species not affected by density-dependent mechanisms? (p. 849)

22. What are two ways k-strategists differ from r-strategists? (p. 849)

23. Fill in the matrix on MDC’s and LDC’s below. (p. 851-852)

<table>
<thead>
<tr>
<th>LDC’s (Less Developed Countries)</th>
<th>MDC’s (More Developed Countries)</th>
</tr>
</thead>
<tbody>
<tr>
<td>population growth trend</td>
<td></td>
</tr>
<tr>
<td>percentage of world</td>
<td></td>
</tr>
<tr>
<td>key characteristics</td>
<td></td>
</tr>
</tbody>
</table>
24. Fill in the matrix on MDC’s and LDC’s below. (figure 44.17)

<table>
<thead>
<tr>
<th></th>
<th>LDC’s (Less Developed Countries)</th>
<th>MDC’s (More Developed Countries)</th>
</tr>
</thead>
<tbody>
<tr>
<td>hazardous waste</td>
<td></td>
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<tr>
<td>production</td>
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<td></td>
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<tr>
<td>consumption</td>
<td></td>
<td></td>
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</table>