Cheat Sheet

Chapter 53 Questions

1. **What is the density of a population?**
2. **What is dispersion?**
3. **What is the mark-recapture method?**
4. **What is immigration/emigration?**
5. **What is the most common pattern of dispersion?**
6. **What is a uniform pattern of dispersion?**
7. **What is territoriality?**
8. **What is random dispersion?**
9. **What is demography?**
10. **What is a life table?**
11. **What is a cohort?**
12. **What do demographers that study sexually reproducing species do to simplify their measurements?**
13. **What is a survivorship curve?**
14. **What are the three types of survivorship curves?**
15. **How is reproductive output measured for sexual organisms?**
16. **What are the symbols for different population statistics?**
17. **What is exponential population growth?**
18. **What is the intrinsic rate of increase?**
19. **What is the carrying capacity?**
20. **What is logistic population growth?**
21. **Why do some organisms diverge from logistic population growth?**
22. **What is life history?**
23. **What is semelparity?**
24. **What is iteroparity?**
25. **What is K selection?**
26. **What is r-selection?**
27. **What is the difference between density dependent and independent?**
28. **What is a regulated population?**
29. **What are the 6 density dependent factors?**
30. **What are population dynamics?**
31. **What is a metapopulation?**
32. **What is the *Pgi* gene?**
33. **Describe past human growth.**
34. **Describe current human population.**
35. **Describe future growth.**
36. **What is the demographic transition?**
37. **What is a country's age structure?**
38. **What is infant mortality?**
39. **What is life expectancy at birth?**

40. What is the ecological footprint?
41. What is a global hectare (gha)?

Chapter 53 Answers

1. Number of individuals per unit area/volume
2. Pattern of spacing among individuals of population
3. capture random sample of individuals, mark each individual then release. In second capture, number of marked captured animals (x) divided by total captured (n) should equal number of individuals in first capture (s) over the estimated population size (N).
4. INflux of new individuals from other areas/ movement of individuals out of an area
5. Clumped, individuals aggregated in patches
6. Evenly spaced, results from direct interactions between individuals in the population
7. Defense of bounded physical space against enroachment
8. Unpredictable spacing, position of each individual independent of others
9. Study of birth, death, and migration rates and how they change over time
10. Summarizes survival and reproductive rates of specific age groups
11. Group of individuals of the same age
12. Ignore males, consider only females
13. Plot of proportion or numbers in a cohort still alive at each age
14. Number of survivors on log scale, Type I flat at start, drops steeply among older age groups (present in animals that produce few offspring but provide good care. Type III drops sharply at start, flattens out as death rates decline (associated with organisms that produce many offspring but little care). Type II death rate is constant (rodents, invertebrates, lizards, and annual plants)
15. Average number of female offspring produced in given age-group
16. N = population size, B = birth rate, D = death rate, R = B-D, $r_{delta\ t}$ = per capita population size change rate, r= instantaneous per capita change in pop size
17. Constant proportional growth, ideal conditions
18. Per capita rate at which an exponentially growing population increases in size at each instant in time (r), dN/dt = rN.
19. K, maximum population size that a particular environment can sustain
20. Per capita rate of population growth approaches zero as population size nears K. dN/dt = rN (K-N)/K, produces sigmoid (S-shaped) growth curve)
21. Negative effects are realized after a delay, causing population size to overshoot K
22. Traits that affect an organism's schedule of reproduction and survival.
23. One-shot pattern of big-bang reproduction
24. Repeated reproduction
25. Selection for traits that are advantageous at high densities
26. Selection for traits that maximize reproductive success in uncrowded environments
27. independent does not change with population density.
28. When one or more dependent factors cause its size to decrease
29. Competition, disease, predation, territoriality, intrinsic factors (aggressive interactions/hormonal changes), toxic wastes
30. Population fluctuations from year to year/place to place

31. Linked local populations separated by unsuitable habitat
32. Gene in Glanville fritillary (*Melitaea cinxia*) butterfly, codes for phosphoglucoisomerase. Catalyzes second glycolysis step, correlates with CO_2 production. Those heterozygous for an SNP flew twice as far than homozygous individuals.
33. 500 million 1650, 1 billion 1850, 2 billion 1930, 4 billion 1975. Faster than exponential. Annual rate 1962 2.2% (peak), 1.1% 2014.
34. 7.2 billion people, increasing by 78 million per year (200,000 per day)
35. 0.5% growth rate by 2050, projected 9 billion by 2050
36. Movement from high birth rates and death rates toward low birth and death rates
37. Relative number of individuals of each age in the population, bottom heavy means high birth rates, even means medium birth rates, top heavy means low birth rates
38. Number of infant deaths per 1000 live births
39. Predicted average length of life at birth
40. Aggregate land and water area required by each person, city, or nation
41. Hectare of land or water with productivity equal to average of all biologically productive areas on Earth (1 hectare = 2.47 acres). 1.7 gha per person. In US typically 8 gha.