

EEB 2208 (Introduction to Conservation Biology)

Sample Test Questions: Lectures 14-17

Before attempting to answer these questions, make sure you read the document titled “Exam Format Information”, which is posted on the web site under “Important course documents”. That document explains how to answer questions on my exams.

For the following sets of questions identify all answers that are correct. Each numbered item is worth 1 point.

Why is it easier to set up a captive breeding program for plants than animals?

1. Plants can persist with much smaller population sizes than animals.
2. Plants generally require more specialized breeding conditions than do animals.
3. Maintaining plants ex-situ usually requires less space than animals.
4. Double-clutching is easier in plants than animals.
5. Genetic drift is more severe in animals than in plants.

The black-footed ferret is an endangered species that has been bred in captivity. A new release program is being designed to establish a new population in the wild. Which of the following recommendations would benefit the organizers of the release?

6. Once the release has been done, stay well away from the release site at all times so as to not disturb the animals.
7. Release as few individuals as possible to minimize the risk of something going wrong.
8. Augment populations at regular intervals to simulate immigration.
9. Avoid soft releases.
10. Choose a release site near the periphery of the species' former range.

A group of researchers has created a demographic model to estimate the extinction risk for Sumatran rhinos. The model is designed to determine the probability that the current population of 275 animals will go extinct within the next 100 years. All of the data for the model come from a detailed, long term study of birth and death rates from the wild population. The researchers conducted 10,000 simulations, and found that the population went extinct in 150 of them. Which of the following statements are true?

11. The model is deterministic.
12. The model includes uncertainty in the population's trajectory.
13. According to the model, the population has at least a 90% chance of persisting for 100 years.
14. According to the model, environmental stochasticity is a major threat to the persistence of this population.
15. The species is completely safe from extinction.

Which of the following statements about the effective population size are true?

16. It is usually 2-3 times greater than the census population size.
17. It is a theoretical measure of how many individuals contribute their genes to future generations.
18. It is affected by the sex ratio, population size fluctuations, and reproductive variation.
19. The smaller the effective population size the smaller the risk of inbreeding.
20. It can be used to estimate the rate at which species richness declines.

Which of the following statements about the global reserve network are accurate?

21. About 4% of the world's land surface is strictly protected.
22. Marine reserves cover a greater area than terrestrial reserves.
23. Although many of the world's species are not protected by reserves, almost all threatened species are protected.
24. In the U.S., National Parks, National Wildlife Refuges and National Forest exist solely to protect biodiversity.
25. Reserves in California are largely located in areas of high biodiversity.

Which of the following statements about sink habitats are true?

26. Reproductive rates are always lower in sink habitat than in source habitat.
27. Mortality rates are always higher in sink habitat than in source habitat.
28. The population growth rate is always lower in sinks than in source habitat.
29. The chance of a population going extinct in a patch of sink habitat can depend on the dynamics of populations in other habitat patches.
30. Sink habitats have no conservation value.

Which of the following statements about the equation, $H_{t+1} = (1 - 1/2N_e)H_t$, are true? (3 points)

31. N_e is the number of individuals in the population.
32. H_t is a measure of the amount of genetic variation in the population.
33. H_{t+1} is always smaller than H_t .
34. The equation describes the effect of genetic drift on a population.
35. The equation describes changes in genetic diversity in a population.

36. Give two reasons why conservation biologists consider genetic diversity to be important. (2 points)

37. Give an example of each of the following. Examples must be individual species, rather than references to groups of species. (3 points)

A species that has been the subject of a PVA:

A species that has been the subject of a captive breeding program:

A species that has suffered from the effects of inbreeding:

38. Describe the advantages and disadvantages of using computer simulations to estimate the chance that a population will go extinct under different scenarios? (5 points)