

EEB 2208 (Introduction to Conservation Biology)
Homework 9: Lectures 1-17

Homework checklist

- Answer every question or you will get no points
- Submit your responses before midnight on the day they are due or you will get no points
- Submit your answers via huskyct, following the instructions in the “Homework overview” document. Do not put your answers in the “Comments” box, or you will get no points.
- If you write your homework in Word and then copy & paste into HuskyCT, make sure you are not using Word’s auto-numbering, otherwise all the question numbers will disappear when the homework is submitted (and you will get no points).
- Be sure to use the format explained in class and for Homework 1. Each numbered item is a separate question and would be worth 1 point on an exam.
- A = true, B = false

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.

Recently, some researchers put forward their plans to use genetic techniques to clone passenger pigeons from DNA obtained from museum specimens in order to bring the species back from extinction. Which of the following statements related to this endeavor are correct?

11. Before its extinction the passenger pigeon was perhaps the most common land bird on Earth, with a single flock estimated to contain about 2 billion birds.
12. To produce a viable population of passenger pigeons, the researchers are likely to need genetic material from a lot of individuals.
13. Passenger pigeons went extinct because they were an island endemic.
14. If successful, this would be a first because endangered species have never been cloned before.
15. If cloning is successful, the population should be increased to 500 individuals before it is considered safe from extinction.

Which of the following statements about the global reserve network are accurate? (3 points)

16. About 4% of the world's land surface is strictly protected.
17. Marine reserves cover a greater area than terrestrial reserves.
18. The rate at which additional land is protected has slowed considerably in the past few decades.
19. In the U.S., all marine protected areas exclude activities such as fishing, oil extraction and recreational boating in order to protect biodiversity.
20. One advantage of captive breeding over the creation of reserves is the reduced cost.

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

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

Which of the following statements correctly links a concept with an appropriate example? (3 points)

26. Humans are a keystone species.
27. Pandas are flagship species.
28. Beavers are ecosystem engineers.
29. Sea turtles are a type of by-catch.
30. Because albatross are long-lived species even small reductions in their reproductive rates make them vulnerable to extinction.

31. Give an example of each of the following. Examples must be individual species, rather than references to groups of species. (5 points)

- a) A species that has been the subject of a PVA:
- b) A species that has been the subject of a captive breeding program:
- c) A species that has suffered from the effects of inbreeding:
- d) A species that has undergone seriously population decline due to an invasive species:
- e) A species that has undergone seriously population decline due to by disease:

32. Golden lion tamarins have been bred in captivity, and since 1984 conservation biologists have been releasing them into the wild. Describe four distinct things that could be done to improve the success of the release program. (4 points)

33. Describe the role each of these things plays in conservation biology. (4 points)

- a) By-catch
- b) Seed banks
- c) Brood parasitism
- d) Cloning

34. What ideas did the following people contribute to conservation biology? (2 points)

- a) Greame Caughley
- b) Mark Shaffer