

EEB 208 (Introduction to Conservation Biology)

Sample Question Answers

Correct answers are highlighted in bold. For each I've added a couple of notes (in red) to explain my thinking in designing the question, to give you a sense of what I'm trying to find out when I ask questions like these.

1. Which of the following things have been suggested as reasons why conservation is important (3 points).

- a. **People like nature.**
- b. **Biodiversity is a source of building materials.**
- c. **Human health can be affected by biological diversity.**
- d. **Future generations have the right to experience the biological diversity that we see today.**
- e. **Ecosystems provide important services to humans.**
- f. **If too many species go extinct there might be an ecological catastrophe, like that on Easter Island.**

Note that it is possible for all answers to be correct, or for all to be incorrect.

2. Using data collected from vets, researchers have studied the mortality rate of cats that have fallen from buildings to see whether the height of the fall influences the chance that the cat will die. Surprisingly, they found that cats who fall from floors 1-5 were more likely to die than those that fell from higher up (floors 6-32). Why is this?

- a. Falling from high up gives the cats time to position themselves so that they land safely.
- b. **The data are biased.**
- c. A mean is being compared to a median.
- d. Fewer cats fall from high floors than low floors.
- e. **Vets don't see most of the cats that fall from higher floors.**
- f. Cats that fall from high up relax allowing them to survive impact better.

Note that the correct answers here are two ways of saying the same thing – the first a general statement, the second a specific one. The point of this question is to test whether you can recognize both the specific issue that relates to this data set and the general problem it relates to. Note too, that part d might be correct (as, I guess, could parts a and f), but we have no evidence to support that conclusion, so you would not get points.

3. Which of the following statements about species richness are generally true?

- a. Richness increases with increasing latitude.
- b. **Richness is highest in the tropics.**
- c. Richness is higher on islands than on the mainland.
- d. Richness is highest at high elevations.
- e. **Richness is highest in hotspots.**
- f. **Richness increases with habitat complexity.**

The answers here are basically things you simply need to learn. But, most of them are things that make sense even if you haven't been in class.

4. How does the current rate of extinction compare to the background rate?

- a. They are about the same.
- b. It is about ten million times greater.
- c. **It might be as much as ten thousand times greater.**
- d. It is lower, but scientists are not sure how much lower.
- e. **It is about 100-1000 times greater.**
- f. It is impossible to compare them.

If I ask you about numbers presented in class, the questions will be like this. E.g., I will expect you to know things approximately (i.e., to within an order or magnitude or so), but I won't expect you to know them exactly. Parts a, b, d and e test whether you know the actual rates of extinction – getting these parts right tells me that you know the basic, most important, information. Part c tests whether you understand that there is uncertainty, and roughly what magnitude it has – getting this part right tells me that your knowledge is more sophisticated than just rote memorization. Part f tests whether you understand that, even though there is uncertainty, we can still draw useful conclusions – getting this part right in addition to all the other parts, tells me that you really understand all the main points I was trying to get across.

5. Climate change has been predicted to cause many changes in the future. Which of the following things are already happening? (3 points)

- a. The length of growing seasons have declined.
- b. The extent of permafrost in the Arctic has increased.
- c. Globally, net primary production has decreased.
- d. Major ocean currents have changed direction.
- e. **European butterflies have shifted their geographic ranges to the north.**
- f. Birds in temperate areas have begun to breed later in the spring.

Different parts of this question are designed to test different things. Parts a, e and f should be quite easy as they simply test whether you understand the direction of changes that have happened. Parts b and c also test whether you understand the meaning of technical terms (permafrost and net primary production) – if you know the terms they shouldn't be too difficult, but if you don't know these terms it will be harder. Part d just tests whether you can distinguish between things that there is already evidence for and things that are projected as future possibilities.

6. List five things that make a species especially vulnerable to extinction, and for each say briefly why it is important (5 points).

See notes to Lecture 7.

7. Define the following terms (6 points).

- a) **Keystone species** See notes to Lecture 4 and text book.
- b) **Beta-diversity** See notes to Lecture 4 and text book.
- c) **Endemic species** See notes to Lectures 5 and 6.

8. Describe two ways in which conservation biology is similar to medicine (2 points).

See notes to Lecture 1.