

EEB 2208 (Introduction to Conservation Biology)

Homework 6: Lectures 1-12

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

For the following sets of questions identify which answers are correct and which are false.

Climate change has been predicted to cause many changes in the future. For which of the following things, is there already good evidence?

1. Growing season lengths have declined.
2. Net primary production by plants in the Amazon Basin has declined.
3. Sea-levels are rising faster than IPCC reports have predicted.
4. Arctic permafrost is spreading.
5. Many species have shifted their geographic ranges to the north.

Which of the following statements about global change are accurate?

6. A major effect of increasing atmospheric CO₂ is that the world’s oceans are becoming more acidic.
7. Atmospheric carbon dioxide concentrations are at their lowest point in 400,000 years.
8. A major reanalysis of global temperature data that was conducted recently suggests that warming trends are quite different from what previous analyses have predicted.
9. Melting of Arctic sea ice is predicted to cause sea-levels to rise over the next century.
10. Increased air-travel by humans is likely to increase the spread of disease organisms.

Which of the following examples are correct?

11. Animal Planet, the cable TV channel, derives from a cultural ecosystem service.
12. Vultures provide ecosystem services that are threatened by painkiller use.
13. Bushmeat is an example of a supporting ecosystem service.
14. The disappearance of wolves from Connecticut is an example of extirpation.
15. Humans are an example of an ecosystem engineer.

Which of the following statements about ecosystem services are correct?

- 16. Increased nitrogen use, in the form of fertilizers, has provided an important ecosystem service to humans.
- 17. Increased nitrogen use, in the form of fertilizers, has created “dead zones” in the world’s oceans.
- 18. High biodiversity is nearly always found in places that provide a lot of ecosystem services.
- 19. The magnitude of pollination services depends on the proximity of natural habitats.
- 20. Ecosystem services are the basis for human well-being.

The following graph summarizes information from many studies of the way in which climate change is affecting species. Which of the following statements about the graph are accurate?

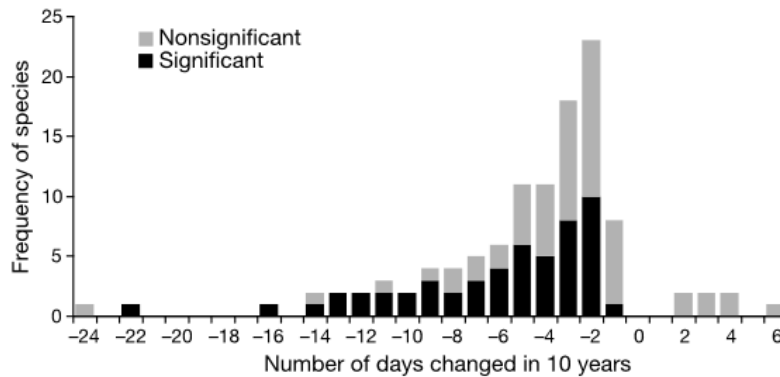


Figure 1 Frequency distribution of species and groups of species (see text) with a temperature-related trait changing by number of days in 10 years. No data were tabulated for species showing zero days changing in ten years (see Methods).

- 21. The phenology of entire communities of organisms are changing in synchrony.
- 22. Key events in the life-history of most species studied now happen earlier in the year.
- 23. Climate induced extinctions are getting more and more common.
- 24. This figure provides support for climate-caused changes in phenology.
- 25. A possible consequence of the results shown here is that symbiotic relationships will be disrupted.

Which of the following statements about species endangerment are correct?

- 26. In Wilcove et al.’s study of endangered species in the U.S., most species were threatened by habitat loss alone.
- 27. In the same study, disease was found to affect about 40% of all species.
- 28. The IUCN has conducted complete assessments of all of the world’s species to provide information on how many are endangered.
- 29. IUCN assessments are based only on population size and known threats.
- 30. In an analysis of potential future extinctions, Thomas et al. found that climate change alone is likely to cause a 6th mass extinction.

Conservation biologists frequently make inferences based on imperfect knowledge and extrapolation. Which of the following statements, based on extrapolation, are reasonable?

31. Identifying biodiversity hotspots based on well-studied groups of organisms will ensure the protection of all groups.
32. Data deficient species are so numerous that it is impossible to compare modern extinction rates to those in the past.
33. If a data deficient species is declining, habitat loss is probably a contributing factor.
34. Protecting habitat in the lowland tropics is likely to benefit more species than protecting habitat in the montane boreal zone.
35. If a terrestrial species has declined due to habitat loss, it is likely that agriculture is the cause.

36. Describe three broad categories of ecosystem service, as described by the Millennium Ecosystem Assessment, and give an example of each. (6 points)

37. Give specific examples for each of the following things. (5 points)

- a) An introduced species and a native species that it affected:
- b) A greenhouse gas:
- c) A species used for biological control and the species it was supposed to control:

38. Describe the way in which the ecology of four particular species of your choice have changed as a result of climate change (4 points)