



Telemark University College

**FINAL EXAM**

**4505 CONSERVATION BIOLOGY**

**2012**

Time: 01.08.2012, 10.00 hours – 05.08.2012, 10.00 hours

Language: English

# Pages: 3

Facilities:

Notes: All questions count equally as much. The exam accounts for 100% of the final grade

**PS! Syllabus for the exam:**

Essentials of Conservation Biology, 5<sup>th</sup> edition, 2010, R. B. Primack (textbook)  
Lecture notes and presentations



Department of Arts and Sciences

### Question 1

- a) What is *biological diversity*, and how is this different from *species diversity*?
- b) When is a species extinct? Describe five categories of species extinctions.

### Question 2

- a) Decisions on protecting species, communities, ecosystems, and genetic variation often come down to arguments over money. Mention and describe the five different types of *economic values* that can be assigned to biological diversity.
- b) Explain the term *future discounting*, and how this behaviour can lead to the loss of biological diversity?

### Question 3

- a) The term *extinction debt* is strongly related to habitat destruction and fragmentation. What does it mean?
- b) What categories of species are most vulnerable to extinction? Mention 10 of the 15 categories of species that are described in the textbook.

### Question 4

- a) Habitat fragmentation is a serious threat to biological diversity. How can habitat fragmentation *negatively* affect plant and animal populations?
- b) What are the other six major threats to biological diversity?

### Question 5

- a) What is meant by *desertification*, and describe the different factors that leads to this process. In which part of the world is the process of desertification most severe?
- b) Not all exotic species will become invasive species when introduced into a new location. Based on the “general rule”, how many exotics are expected to establish themselves in a new location, and how many will become invasive species?
- c) What constitutes a metapopulation?

### Question 6

- a) The “Allee effect” can negatively affect survival and reproduction under which five circumstances?
- b) One way of deciding which areas to protect is to use the *species approach*. This includes the use of so-called focal species. Mention three groups of focal species, and explain why protecting these species will benefit other species in the process.

### Question 7

a) Conservation biology is often claimed to be dominated by two paradigms: *the small population paradigm* and *the declining population paradigm*. Describe the main focus of the two paradigms and explain the difference between them.

b) Species-area relationships have been used to predict the number and percentage of species that would become extinct if habitats were destroyed. According to the island biogeography model, what is the predicted loss of species (in percent) when a habitat is reduced by 50%, 90%, or 99%?

### Question 8

Small populations are subject to rapid decline in numbers and local extinction for three main reasons. What are these reasons, and discuss their negative effects on *small populations*.

## Home assignment in replacement of the field trip in 4505 Conservation Biology 2012

1) Discuss the global and illegal trade of endangered animals and plants. Include in your discussion the purpose and content of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Minimum 3 pages

2) The ortolan bunting *Emberiza hortulana* is a rare and endangered bird in many European countries. Give a general description of the bird and its ecology, and discuss the reasons for its decline in Europe (with special emphasis on Norway). Minimum 3 pages