

BIOLOGY 406
Spring 2018
CONSERVATION BIOLOGY

College of Charleston, Department of Biology

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Office Hours: Wednesdays 9 am to 11 am or by appointment

Lecture Time: MWF 11:30 am-12:20 pm

Dates: January 8th, 2018 to April 27th, 2018

Lecture Location: Harbor Walk West 305

Final: Friday April 27th, 12:00 pm to 3:00 pm (tentative)

Course Description: The rapid loss of biodiversity is one of the most serious environmental issues facing humanity. Conservation Biology/Ecology is the science of investigating and preserving biological diversity. This course provides insights into the benefits and services that nature provides and broadly explores strategies that can be implemented to protect biodiversity and sustain ecological integrity.

This course will use examples from around the globe to address central and critical questions in Conservation Biology:

- How is biodiversity measured and how does it change over time and space?
- What are the threats to biodiversity?
- How does science aid our ability to conserve biodiversity (what can be done)?

Learning Objectives:

- Understand the interplay between biodiversity, the environment, and humans
- Understand why species are going extinct and predict species that are most vulnerable
- Recognize and classify signature species of local and global ecosystems
- Gain confidence reading about and discussing the population genetics of small populations and population viability analysis
- Understand the pros and cons of contemporary species concepts
- Enhance appreciation of the severity of the contemporary anthropogenic extinction crisis
- Consider the ethics of human-caused extinction of other species
- Weigh the political and economic dimensions of conservation

Prerequisites: Biology 111, 112, 211, 305, 341 and Math 250

Lecture: Lectures will occur three times (MWF) a week for 50 minutes each. Throughout the semester, lectures will be divided into four broad categories of Conservation Biology:

- Biodiversity
- Threats to Biodiversity
- Maintaining Biodiversity
- Human Dimensions of Conservation

Quizzes: Quizzes (4 quizzes will make up a total of 25% of your final grade) will be given at the conclusion of each of the lecture categories listed above. Quizzes are designed to encourage attendance at lectures and supplemental reading of the textbook. Select quiz questions will return on exams.

Exams: Two exams (Mid-term and Final; 20% and 30% of your grade, respectively) will consist of multiple choice questions, short answers or problems, and essays.

Required Textbook: Sodhi NS, Ehrlich PR (2010) *Conservation Biology for All*. Oxford University Press, Oxford.

This textbook is required for the course but is **freely available for download***:

<https://conbio.org/publications/free-textbook/>

or:

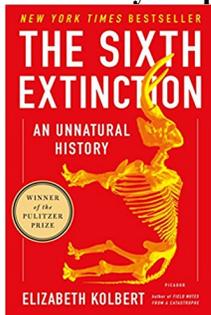
https://conbio.org/images/content_publications/ConservationBiologyforAll_reducedsize.pdf

*Students wishing to obtain a hard copy of this textbook can do so online.

The textbook provides a foundation for students and acts as an important introduction to Conservation Biology. Students should read the textbook in full as a supplement to lectures and in preparation for quizzes and exams. I will upload additional materials to provide more information about particular subjects not found in the book.

Additional Assignments:

Secondary Required Reading: *The Sixth Extinction*, by Elizabeth Kolbert



Kolbert introduces mass extinctions of the geological record, and contrasts these with abrupt anthropogenic extinction occurring in modern times. There will not be a formal assignment for this book, but a set of questions based on this book will be on the final exam, so a careful and critical reading of this book is recommended.

Lowcountry Natural History and World Geography Knowledge: Conservation Biologists should be familiar with key species and biomes present at both local and global scales. In addition, it is important to understand global geography and historical patterns of land use changes and biodiversity loss and change. Over the course of the class, students will be introduced to and provided a list of species and ecosystems that local Conservation Biologists should be able to recognize. An optional Saturday field trip will also be offered to see some of these species and communities.

Throughout this semester, students will also be introduced to biomes, geographical features, organisms, and maps/images from sites across the globe. These will be introduced through lectures, discussions, the book report presentations of peers, and lecture slides.

Approximately 10 % of the questions on both the Mid-Term and Final Exams will be related to these subjects.

Book Report: Each student will read a popular book on any subject broadly related to conservation and deliver a 20-minute PowerPoint summary and analysis to the class. A list of potential books will be provided on OAKS, but, as a general rule, the goal of this assignment is to read a moderate length (200 pages or more) book that amplifies our understanding of Conservation Biology and Ecology. Full instructions for the report will be provided on OAKS. Presentations will be carried out in late March and April, so it is recommended that you choose your book and complete the reading no later than March. **Please email me with your choice to prevent duplication with other students and contact me ASAP to schedule your presentation.** This presentation will make up 25% of the final grade.

Grades:

Your grade in this course will be based on the components shown below. These components will be worth the following percentages of your final grade:

<u>Course component</u>	<u>% of grade</u>
<i>Mid Term Exam</i>	20%
<i>Final Exam</i>	30%
<i>Textbook Quizzes</i>	25%
<i>Book Report and Presentation</i>	25%
Total	100%

Grades will be determined as:

A:	93.0-100.0%
A-:	90.0 - 92.9%
B+:	87.0 - 89.9%
B:	83.0 - 86.9%
B-:	80.0 - 82.9%
C+:	77.0 - 79.9%
C:	73.0 - 76.9%
C-:	70.0 - 72.9%
D+:	67.0 - 69.9%
D:	63.0 - 66.9%
D-:	60.0 - 62.9%
F:	0.0 - 59.9%

Tentative Course Schedule:

Topic	Suggested supplemental Readings in Sodhi & Ehrlich
Part I. Biodiversity	
Course Introduction and Syllabus/Introduction to CE	Ch. 1
An introduction to conservation ecology	Ch. 1
Defining biodiversity	Ch. 2
Measuring biodiversity	Ch. 2
Why is biodiversity important?	Ch. 1-3
Ecosystem services	Ch. 3
Part II. Threats to Biodiversity	
Extinction (tentative quiz #1)	Ch. 4-5, 10
Habitat degradation and loss	Ch. 4-6
Overharvesting	Ch. 6
Invasive species	Ch. 7
Climate change	Ch. 8
Fire and Pollution	Ch. 9
Medicine, Magic, Jewelry, and Cosmetics	
War, Military, and Conflict	
Disease	Ch. 9
Mid-term exam (tentative date March 2nd)	
Part III. Maintaining Biodiversity	
Protected areas (tentative quiz #2)	Ch. 11
Translocations	Ch. 11
Case study: marine and freshwater fishes	Ch. 10
Endangered species management	Ch. 11
Research science informing management and conservation efforts	
Reserve design	Ch. 12
Part IV. Human Dimensions of Conservation	
Conservation and law (tentative quiz #3)	Ch. 12
Marine conservation	
Future of conservation	Ch. 15-16
Natural resources and conservation	Ch. 15-16
Governance and consumer demand	Ch. 13
Book Report Presentations and additional case studies (tentative quiz #4)	

COURSE POLICIES

Communication – Documents needed for completing required work (and abundant optional readings or supplemental material) will be available on OAKS. Check OAKS frequently for newly uploaded or recently revised documents. I will send emails to the entire class as needed to inform students of changes of schedule, interesting seminars, and any new materials needed for class. Please contact me or come to office hours if you have any questions.

Lecture – Please attend every lecture. If you must be absent, please inform me in advance and visit me during office hours if you have any questions about the lecture you missed.

Exams – If you know in advance of an unavoidable conflict with a scheduled exam, talk to me about it during the first two weeks of the semester. Scheduled exams that are missed without prior permission cannot be made up except in the case of a documented medical or family emergency.

SNAP students are requested to make arrangements with the instructor well in advance of exams.

ACADEMIC INTEGRITY

Academic integrity is important to the College of Charleston community. In addition, this course asks you to perform tasks like a professional biologist, and you will be required to uphold the standards of integrity expected in the profession. Plagiarism, lying, cheating or attempted cheating are violations of the College's honor code and will be dealt with accordingly. Please be absolutely sure that you understand what the honor code requires of you (refer to pages 10-12 of the student handbook, <http://cofc.edu/generaldocuments/handbook.pdf>). If you have any questions or concerns about honor code expectations or about how to avoid violations, please consult me.

Plagiarism: Plagiarism is any use of words or ideas produced by another person without proper attribution, and includes failing to paraphrase adequately or to cite sources properly. Whether intentional or unintentional, plagiarism is forbidden by the honor code. Please consult the instructor if you have any questions or concerns about how to use and cite sources. **Plagiarism absolutely will not be tolerated!**

Re-using work: Please be aware that re-submitting work that you or anyone else has done for this or any other class or project is a violation of the honor code, even if the work is revised.