

BIOLOGY 144 - PRINCIPLES OF CONSERVATION BIOLOGY

Spring, 2008

Instructor: Dr. Michael Reed

TA: David DesRochers

Office hours: Reed: Tues 2-3:30, or by appointment, Dana 218, michael.reed@tufts.edu

DesRochers: Wed 10-noon, Barnum 216B, david.desrochers@tufts.edu

Class hours: Barnum 104, Mon, Wed, 1:30-2:45 **Optional Writing Workshop:** Mon 3-3:50

Text: ESSENTIALS OF CONSERVATION BIOLOGY, 4th ed., Primack

Reading assignments: Chapters from the text, and readings from the primary literature (on blackboard), associated with the lectures are listed by lecture on the next page.

Course requirements and grading

- 1) Two mid-term exams (60 pts each; total 60% of final grade) [there is NO final exam]
- 2) Management Plan poster and associated materials (50 pts; 25% of final grade)
 - Topic must be approved by March 5
 - 1/3 of grade determined partly by peer (your fellow students) evaluation
- 3) Evaluation of other students' Management Plan posters (10% of final grade) – your evaluations will be confidential to the students being evaluated
- 4) During semester you will be assigned 8 papers from the primary literature to read before a particular lecture. For each paper, at the start of class, you will hand in a statement – of one thing that surprised you about the paper and why you were surprised (5% of final grade). If you don't attend class, you don't get to hand in your surprise statement

Notes about grading:

- Exams will NOT be cumulative, EXCEPT when material is repeated in the new examination period.
- I grade on straight percentages.
- Make up exam policy: NO make-up exams (except in extraordinary & documented circumstances)
- You must be present for both days of poster presentations.
- NO extra credit
- If you have a question regarding how a question was graded on an exam, after reviewing the posted exam key you need to submit in writing why you think your answer might be correct, along with your exam. This must be done *within 7 days* of my returning the exam to the class. The exam key will be posted on the wall outside Ba 216 (not on Blackboard).

Date	Topics	Text Chapter	1° literature
Jan. 16	What is Conservation Biology?	1; 6	
23	Biodiversity	2	
28	Global patterns of biodiversity	3	
30	Valuing biodiversity	4; 5	
Feb. 4	Extinction	7	
6	Vulnerability to extinction	8	
11	Threats to biodiversity I	9	
13	Threats to biodiversity II	10	Hitch & Leberg 2007
20	Threats to biodiversity III	–	Ricciardi 2007
21	Problems of small populations, conservation genetics	11	
25	Applied population biology	12	Wilcox & Donlan 2007
27	EXAM I		
March 3	Ecosystems and Communities	–	Myers et al. 2007
5	Surveys & monitoring	–	Wilcove & Master 2005
	Management plan topic must be approved by now		
10	Establishing new populations	13	
12	Ex situ approaches (captive breeding; translocation)	14	
24	Protected areas	15	
26	Protected areas networks	16	
31	Managing protected areas	17	Van Aarde & Jackson 2006
April 2	Outside protected areas	18	Hansen & DeFries 2007
7	Restoration ecology	19	
9	Sustainable development	20	LaDeau et al. 2007
14	International conservation & the future	21; 22	
16	EXAM 2		
23 & 28	Poster presentation & evaluation (<u>all posters due 23rd</u>)		

Management Plan

Students will work in teams of 2 to prepare a management plan for a threatened or endangered species or ecosystem, or a plan to control an exotic species or emerging disease whose invasion is causing biodiversity problems. Each team will prepare a **poster, and turn in a bibliography** of materials used in developing your management plan. Citations in the bibliography should be almost exclusively from the primary scientific literature. If you do not know what constitutes primary literature, see me or Regina Raboin in the library. Posters are one of the primary methods people in the scientific community communicate research results.

Proposed Management Plan topic must be cleared with me before you start work, and the latest you can clear a topic is **March 5**. Submit topics and/or come talk to me about possible topics **AS EARLY AS POSSIBLE** to avoid being scooped – only one group per species / problem, so first come first served. Before you select a species/ecosystem you should do a literature search to make sure there is sufficient information to tackle the project.

Management plans already exist for many species or ecosystems – your selected project may not be a repeat of an already proposed or completed project. If you select a species or ecosystem with an existing management plan, you need to (1) propose something that goes beyond the existing plan, (2) make it clear in your poster what is new to you and what is not, and (3) turn in a reference to the existing plan so I can see what you did that was different.

Posters will be on display on the dates listed in the syllabus; half the class will present and answer questions one day and evaluate the posters the other (the next day, roles will switch). All posters must be completed and brought in by the first presentation date. Both members of each team will be expected to answer questions regarding management plans when people come to view the posters. Each student will formally evaluate 3 other groups' posters in order to practice thinking critically and assessing others' work and your evaluation will be graded. Your grade will be based on your doing a careful, constructive job of reviewing posters – if you say a poster is great when it is not, your evaluation grade will go down. Also, students will assign a grade to each poster they evaluate, and their grades will affect the poster's final grade.

Selecting a Species / Ecosystem

The scientific literature, popular literature, news, personal experience, and the Internet are filled with examples of endangered or threatened species and ecosystems, and conflicts between environmental and other concerns. You can use any of these sources for an initial selection of a problem to be addressed. Your next step is to search the **scientific literature** to see what information exists that could be used to develop a management plan for a specific area. Please come discuss ideas with me. Web of Science or Skopus are the best places for searches of primary literature.

Some scientific journals that focus on Conservation Biology / Wildlife Management:

Animal Conservation	Ecological Applications
Biodiversity & Conservation	Journal of Applied Ecology
Biological Conservation	Journal of Wildlife Management
Bird Conservation & Ecology	Landscape & Urban Planning
Conservation Biology	Restoration Ecology
Conservation Ecology (on line)	Wildlife Society Bulletin

Some potentially useful Web sites for getting ideas. (There are tons of them of varying quality. These sites are NOT scientific literature, but they might lead you to some.)

The World Conservation Union (IUCN)
www.iucn.org

US Fish & Wildlife Service
<http://endangered.fws.gov/>

Endangered Species - Main Page
<http://eelink.net/EndSpp/>

EDGE (Zoological Society of London)
<http://www.edgeofexistence.org/home.asp>

Wilderness Network
<http://www.wilderness.net/>

The Society for Conservation Biology
<http://conbio.net/scb/>

World Wildlife Fund
<http://www.wwf.org/>

Endangered Species Coalition
<http://www.stopextinction.org/>

Species/Topics you may NOT select:

Killer bees
African wild dog
Brown kiwi
Phragmites
Himalayan blackberry
Coqui (frog)
Pika
Channel Island fox
Polar bear
Purple loosestrife

Diamondback terrapin
Barrier island restoration
Loggerhead sea turtles
Bonobos
Ebola & primates
Short-tailed chinchilla
Gunnison prairie dog
Nairobi – fencing park
Jaguar

Poster format

Abstract: In 350 words or less, summarize your management plan. State the problem, why it is a problem, where it is a problem, and the major findings and recommendations of your management plan. No citations appear in the abstract.

Introduction: Introduce the general conservation/management problem, then narrow the focus of the introduction to your specific management problem. Give the location, interested parties (for many projects this will include who is in conflict), and state your specific goals for the project. By the end of the section a reader should know what you are doing and why.

Background: A brief review of the location and species involved. If your management plan focuses on a single species, give me a summary of its pertinent natural history, ecology, and behavior. If it is an ecosystem, tell me about the ecosystem (biome, primary species, etc).

Proposed management plan: This is the bulk of your project. What do you propose to do? What is your reasoning? Design your management plan as an experiment (= adaptive management). That is, you plan to do “x”, and you expect “y” to occur. This means you should state your plan as a **hypothesis**, or set of hypotheses, or predictions. Include predictions – what specifically should result from your management plan?

Quantifying success: How does your management plan address and solve the problem? What were you not able to deal with? Define “success” for your management plan, and provide criteria for assessing success (or failure).

Literature Cited: *To be handed in separately at time poster is displayed.* All ideas, data, information not your own must be cited, unless they are ideas common in the literature (e.g., plants photosynthesize). All citations must come from the scientific literature. This includes scientific journals, symposia, and some government reports (but not all). When in doubt, ask me. The literature cited section should contain all citations used, and no extras. **Format** for the literature cited section should follow one of the scientific journals listed on page 3. Current issues of some journals are in Barnum 115, open during regular office hours. It might help to view **A Biologist’s Guide to Library Resources:** <http://ase.tufts.edu/biology/bguidel/>

Citing Web pages: DO NOT, unless it is an on-line journal; then cite web page, journal number, and page numbers. The only acceptable use of other Web citations is if you want to document a popular interest in the topic.

PROOFREAD YOUR POSTER. I guarantee that if you wait to the last minute to do this project it will show in the quality of your work.

Lazy team members: If you believe your partner is not being productive, and you cannot get him/her to be productive, tell me.

Poster tips

Your goal for a poster is to distill the information for your management plan into short, clear paragraphs, illustrations, and/or tables in a space not exceeding 1 meter tall by 1.3 meters wide.

1. Everything should be easily readable from at least a meter away. Recommendations: title 72 pt; your names 40 pt; abstract 36 pt; headings 36 pt; text 32 pt. Arial font, bold.
2. Graphs, figures and tables can be pre-mounted on colored paper or poster board for ease in setting up your poster and to highlight the material. Each figure or table should be numbered and referred to in the text of the poster. Each should have a heading of one or more lines in large type (32 pt) that provides a brief (one or two lines) “take home” message.
3. Choose fonts that are easy to read, don’t overuse bold or italics. Background colors should draw attention to material, but not detract from presentation – avoid fluorescent colors.
4. Avoid unnecessary details in preparing figures, drawings or illustrations. Try to keep everything straight forward. If you are copying a figure and the font is too small, rewrite it!
5. Ideally, your poster should be self-explanatory so that you are free to supplement and discuss particular points raised by visitors.
6. If you use a picture or diagram from the Web or other sources, be sure to attribute it.
7. Arrange material in columns rather than in rows. It is easier for viewers to scan a poster by moving systematically down then across rather than zigzagging back and forth. Figures should be numbered, with matching reference in text. An abstract should be placed at the upper left. Make sure your names appear on the poster under the title.