

BIO 410 Conservation Biology

Syllabus Spring 2008

Instructor: Dr. Charles Acosta

Office: SC346

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(include Subject line: "BIO410")

Class: SC304 TR 10:50-12:05

Texts: - Conservation Biology: Foundations, Concepts, Applications, by Fred Van Dyke; McGraw-Hill.

- Conservation Biology with RAMAS EcoLab, by S. M Shultz *et al.*

Available from: <<http://www.ramas.com/consbio.htm>>

COURSE OVERVIEW

We will undertake a comprehensive examination of the biological, societal, ethical, economic, and political basis of modern conservation. We will study the core problem that gave rise to the crisis discipline of Conservation Biology – the current unprecedented rate of species extinction and the calamitous decline of biodiversity. We will explore the dynamics of biodiversity at the genetic, population, community, and ecosystem levels in terrestrial, freshwater, and marine environments. This course is not only about discussing conservation problems, but also about applying quantitative methods in a rigorous scientific manner to identify solutions to these problems. Rather than being a casual student observer, you will be asked to participate in the discourse on conservation issues and to use your scientific training in biology to evaluate potential solutions to some of the most pressing problems.

STUDENT LEARNING OBJECTIVES

Students will:

- Review current topics in conservation biology, including status and trends, case studies, and theories in a multidisciplinary setting;
- Understand root causes of the conservation crisis using principles of genetics, ecology, biogeography, and evolutionary biology;
- Study linkages between the conservation crisis and philosophical, economic, social, and political perspectives;
- Discuss problems and synthesize solutions in an objective manner, based on scientific training;
- Research, present, and write concise but descriptive summaries of conservation issues.

ASSESSMENT

Grading

Midterm Exam	100
Final Exam	100
Book Report	100
Computer Exercises (4)	25 each
<u>Group Research Projects (4)</u>	<u>25 each</u>
TOTAL POINTS	500

- **Exams**

Exams will test for comprehension and expression of major concepts applicable to conservation biology from multiple subdisciplines. The format will be typical short essays, definitions, multiple choice, or other standard test items.

- **Book Report**

You should choose a book from the assigned list (posted on Blackboard Assignments – Book Report). Alternatively, choose a different book on an approved conservation topic in consultation with the Instructor. Read and write a summary of the major premise of the book and a synthesis of your perspectives on the topic. You should read, at minimum, the first 250 pages of the book. If the book is a compilation of authored papers, you may select a few chapters. Grading will be based on completeness of your summary and your in-depth synthesis of the topic.

- **Computer Exercises**

Assignments consist of:

- 1) conducting a computer simulation exercise from the text “Conservation Biology” by Shultz et al. using the RAMAS EcoLab software;
- 2) interpreting resulting graphs and answering questions in the exercise in a brief report.

Assignment topics and due dates are:

- Feb. 21 – Lab 5: Grizzly bears: the problem with small populations
- Feb. 28 – Lab 7: Hector’s dolphins and red-cockaded woodpeckers: Conserving dwindling populations
- Mar. 27 – Lab 8: African hunting and tuna exploitation: Maintaining sustainable levels of harvesting
- Apr. 15 – Lab 11: Park size and species diversity: lessons from islands

- **Group Research Projects**

Problems in conservation are often highly complex, requiring integrated analysis from people with diverse expertise. The objectives of these projects are to:

- 1) foster dialogue and cooperation with your colleagues;
- 2) conduct in-depth research on current conservation issues (not covered in class);
- 3) report to the class and write a summary on your group’s findings and perspectives.

Details on assigned topics are posted on Blackboard Assignments – Research Projects.

Assignment topics and due dates are:

- Jan. 29 – Bushmeat
 - i) Africa; ii) Americas; iii) Asia; iv) Emerging Diseases
- Feb. 12 – Habitat/Ecosystem Protection
 - i) Temperate forests; ii) Tropical forests; iii) Wetlands; iv) Marine
- Mar. 25 – Fisheries
 - i) Sturgeons; ii) Great whales; iii) Sharks; iv) Destructive Fishing
- Apr. 22 – Endangered Species
 - i) Predators (big cats); ii) Turtles (marine and/or fw); iii) Tropical Ornamental Trade (aquarium fish, parrots, orchids); iv) Traditional Medicinal Practices (wildlife body parts, turtles, seahorses)

Report Format: Written reports should be concise, descriptive summaries of the conservation topic. Computer Exercises and Group Research Projects should summarize important findings, starting with a brief introduction to the issue and incorporating references where necessary. These reports will typically be 2 pages, excluding graphs, references, and other materials. The Book Report should summarize the author’s thesis and your own perspectives on the information presented in the book. It should be 4 – 6 pages maximum, excluding references.

Grade will be based on thoroughness of research, objective analysis, thoughtful discussion, and technical effectiveness. All reports should have a title, your name, BIO410 Conservation Biology, and date. References should be formatted as in the journal *Conservation Biology*. Be sure to proofread and edit for errors in grammar, spelling, and punctuation. No late reports will be accepted.

- **University Policy:** Students are required to read and abide by the University Honor Code and other information described in the Code of Student Rights & Responsibilities at the following website:
<http://www.nku.edu/~deanstudents/policies.htm>
- **Accommodations:** Students with disabilities should review the information on available resources and accommodations at the following website:
<http://www.nku.edu/~disability/>
- **Important Dates**
 - Feb. 4 – last day to drop the course.
 - Mar.31 – last day to withdraw from the course with a grade of “W”.

BIO410 Conservation Biology
A Very Tentative Schedule – Spring 2008

Date		Topic	Van Dyke	Schultz
Jan	15	What is Conservation Biology?	1	
	17	History & Ethics	3	
	22	Biodiversity: Species and Valuation	4	
	24	Biodiversity: Community; Measurement	4	1
	29	Biodiversity: Ecosystem & Landscape	4	
	31	Ecology Paradigms	5	
	5	Ecology Paradigms	5	
Feb	7	Genetic Diversity	6	
	12	Genetic Diversity	6	
	14	Populations	7	
	19	Populations	7	2, 13A
	21	Populations	7	6, 5*
	26	Landscapes	8	
	28	Landscapes	8	7*
	4	Landscapes	8	
Mar	6	Midterm Exam		
	11-13	-- Spring Break --		
	18	Freshwater ecosystems	9	
	20	Marine ecosystems	9	
	25	Fisheries	9	
	27	Ecosystem Management	10	8*
	1	Ecosystem Management	10	
	3	Ecosystem Management	10	
Apr	8	Restoration Ecology	11	12
	10	Restoration Ecology	11	
	15	<i>Ex situ</i> Conservation Strategies		11*
	17	Economic value of biodiversity	12	
	22	Sustainable Development	12	
	24	Conservation legislation in the US	2	
	29	International treaties and legislation	2	
	1	Book Report		
May	6	Final Exam		

* Denotes independent written assignments.