

Conservation Biology (ECOL 406R/506R)

aka GEOS 406R/506R, RNR 406R/506R
Syllabus fall 2005 (subject to change)



William A. Calder III, 1934–2002

**Bill Calder, Rocky Mountain Biological Station, Gothic, CO.
Photograph taken in July 1999 by Lorene Calder.**

Introduction

Welcome to Conservation Biology, a three-unit course designed to present principles of conservation biology. Lectures, discussions, and other in-class activities will introduce information that is relevant to the conservation of biological diversity. This information will be derived from the arenas of biology, ecology, policy, economics, and law. Upon completion of this course, students should be able to use knowledge of conservation biology to make informed decisions to guide their personal and professional lives.

Conservation Biology (ECOL 406/ECOL 506) is a senior- and graduate-level course. If you have not completed the catalog pre-requisites for this course, you can expect to have difficulty grasping some concepts and you will likely have to undertake some independent research to "catch up."

This course also has a one-unit lab (ECOL 406L/506L) which is strongly recommended to enhance your learning experience, but is not required. However, if you are enrolled in the lab you must be enrolled in the lecture.

Instructor

Kevin E. Bonine, Ph.D.

office: Biological Sciences East (BSE) 1D (in the basement)

Office Hours in BSE 1D, times TBA, or by appointment.

Office phone: 626-0092, Home phone: 751-1349 (please call before 9pm or after 6am)

email: kebonine@u.arizona.edu

Graduate Teaching Assistant

Kathy Gerst

Office hours TBA, and by appointment. Extra hours to be added during periods of high demand.

Contact information: katgerst@email.arizona.edu

Meeting Times

LECTURE: Tuesday and Thursday 1230-1345h in BIO W 210.

LAB (only for 406L/506L): Friday 1230-1530 (~ in KOFFL 410).

We will usually be meeting on the S Side of BSE to take a van into the field.

See lab schedule for lengthened labs and multi-day labs.

Course Materials

Van Dyke, Fred. 2003. *Conservation Biology: Foundations, Concepts, Applications*. McGraw-Hill, New York. 413+xvii pages.

(Available at Antigone Books, (411 N. 4th Ave, 520-792-3715, antigonebooks.com); about \$85)

Other required readings will be available as pdf files placed on the course website. We will be adding readings as the course progresses so please ask in class and/or check the course website often for updates.

We have also placed on reserve in the Science Library a copy of the second edition of Meffe, G.K., and Carroll, C.R. 1994. *Principles of Conservation Biology*. Sinauer Associates, Sunderland, Massachusetts. This and other optional readings we will try to make available to you, or point out, during the course of the semester.

Web Site

We will maintain a course website (http://eebweb.arizona.edu/eeb_course_websites.htm) with readings, assignments, schedules, announcements, etc. Appropriate powerpoint lectures will likely be posted to the website the day after they are given.

406R Course Work

Lecture Exams (three midterms @ 75 pts each, final 150 pts)	375
Semester Creativity Project	150
Participation in Role-Playing Exercises and Student-led Discussions (~2x50 pts) (~50 points for quizzes and participation)	<u>150</u>
Total Points	675

Graduate Student 506R Course Work

Same as 406R with the addition of an additional written research project (100 pts) for a grand total of 775 points.

Grading

Assignments are due *no later than the beginning of lecture* on the due date, unless otherwise noted. Late assignments will be penalized 10% for each day they are late (this includes being late to lecture on the due date). There will be no 'make up' exams or 'extra credit'. We realize that you have lives (cars do break down, people die, stuff happens). In exceptional cases, and if arrangements are made in advance, we will consider your unique situation.

Grades will generally be distributed as follows (any curving will not be "against you"):

≥ 90%	A
80-89%	B
70-79%	C
60-69%	D
≤ 59%	F

Please re-familiarize yourself with policies against plagiarism, etc., within the UA Student Code of Academic Integrity: <http://studpubs.web.arizona.edu/policies/cacaint.htm>

Students caught cheating may be penalized by failing the relevant assignment or exam, failing the course, or being expelled.

Students with Disabilities:

If you anticipate the need for reasonable accommodations to meet the requirements of this course, you must register with the Disability Resource Center (Disability Resource Center 1224 East Lowell Street Tucson, Arizona 85721, Phone: (520) 621-3268 V/TTY Fax: (520) 621-9423, E-mail: uadrc@email.arizona.edu) and request that the DRC send the instructor official notification of your accommodation by the beginning of the 3rd week of class. Please plan to meet with us by appointment or during office hours to discuss accommodations and how the course requirements and activities may impact your ability to fully participate. All related discussions will remain confidential.

Attendance

You are expected to attend each lecture and each discussion/laboratory session prepared and ready to contribute. Lecture and lab quizzes may be used to motivate your attendance and participation if

necessary. All holidays or special events observed by organized religions will be honored for those students who indicate affiliation with that particular religion. Absences pre-approved by the UA Dean of Students (or Dean's designee) will be honored.

Class meeting suggestions:

Please consider employing these suggestions (borrowed from Guy McPherson) during class discussions:

1. Listen carefully to others before speaking
2. Challenge and refute ideas, not people
3. Focus on the best ideas, not on being the best, or "winning"
4. Before adding your own contribution, practice listening by trying to formulate in your own words the point that the previous speaker made
5. Speak whenever you wish (without interrupting!) even though your ideas may seem incomplete
6. Avoid disrupting the flow of thought by waiting until the present topic reaches its natural end before introducing a new issue
7. If you wish to introduce a new topic, warn the group that what you are about to say will address a new topic and that you are willing to wait to introduce it until people are finished commenting on the current topic
8. Give encouragement and approval to others

Please be aware of the UA policies against threatening behavior by students:

<http://policy.web.arizona.edu/~policy/threaten.shtml>

Course Work Details

Role Playing

Twice during the semester we will ask you to work in groups to present and defend particular points of view in debates about conservation issues and ideas. These will be announced ahead of time and your participation and performance will be graded. We expect you to do some research outside of class in order to be able to defend your point of view with data and other information in an effort to sway the debate in favor of your assigned group. We will also assign short, written summaries after the role-playing exercises to allow you to assess the arguments about the issues and to assess effective means of communication.

Lecture Exams

There will be three midterm examinations and a final examination. The final will be cumulative. Topics covered in the lecture period, by guest speakers, and in the assigned readings will be fair game. Format will be mixed and may include: matching, fill-in, multiple choice, short answer, and essay. We may occasionally have some portion of an exam as a short take-home essay. Be prepared to synthesize ideas, rather than just regurgitate information. There will be no make-up exams. Exams will be closed book and closed note.

Exams will be administered in a modified cooperative manner. First, each student will complete the exam as an individual and will submit this test for grading -- the resulting score will be the base score. Then, students will complete a portion of the exam in small groups. Bonus points will be added to each individual's base score, and the number of bonus points will depend on the score of the group, as shown below.

Group score and bonus points added to each base score:

>95%	add	5%
90.01-95	add	4%
85.01-90	add	3%
80.01-85	add	2%
75.01-80	add	1%

STUDENT CREATIVITY PROJECTS (Adapted from Guy McPherson, 2002)

You are responsible for developing a substantial, original piece of art or literature that incorporates at least one major theme of conservation biology. Examples include painted, sketched, quilted, or sculpted art, photography, poems, songs, plays, and short stories. Performance art is encouraged, but make sure you clear this in advance (so we budget time for it during class). You may work in a group of up to 3 students if

your project requires a high level of effort. Bear in mind that each person in the group is responsible for understanding each component of the project; therefore, the group must work together and plan well enough in advance to give each member an opportunity to thoroughly review the final project.

Because assessment of art and literature is inherently subjective, projects will be co-graded by students and the instructor.

Among the authors who effectively incorporate natural history into literature are Edward Abbey, William Bartram, Wendell Berry, Charles Bowden, John Burroughs, Rachel Carson, Annie Dillard, Marjory Stoneham Douglas, Robinson Jeffers, Joseph Wood Krutch, Aldo Leopold, Barry Lopez, Peter Matthiessen, Simon Ortiz, John McPhee, William Least Heat Moon, Gary Paul Nabhan, Gary Snyder, Henry David Thoreau, David Rains Wallace, Opal Stanley Whiteley, Terry Tempest Williams, and Ann Zwinger. Particularly if you are working on a "literature" project, I encourage you to read several of the works of these authors, and potentially to model your writing efforts after them.

If you complete a project that involves written materials, I will expect you to demonstrate excellent writing skills. Written projects must be typewritten and double-spaced. Please use no binders, folders, or fasteners except a staple in the upper left-hand corner.

Each project can be reviewed as many times as you would like before final submission. You must allow 2 weeks for each review (i.e., it will take us 2 weeks to return your submission); therefore, no projects will be reviewed less than 2 weeks before the due date. We will review draft projects for content, but we will not provide editorial reviews of drafts. We encourage you to seek editorial reviews from peers.

You will propose the criteria and the weights that will be used to evaluate your project. For example, you may want to employ the following criteria, and associated weights: link to conservation (30%), creativity (30%), effort (30%), artistry (i.e., is it evocative, aesthetic? 10%). We encourage you to propose alternative criteria and associated weights. Please submit these during the class period (30 Nov) before projects are due. Everyone, including you, will grade your project based on your criteria. Note that projects will be displayed in class.

Projects will not be blind-graded, but they will be co-graded: the grade you and your peers assign your project will have equal or greater weight than the grade assigned by the instructor. Projects are due at the beginning of the lecture on 08 December. Late projects, or those that do not follow the prescribed format, will not be graded.

Projects will be displayed at a public forum at the end of the semester.

Graduate Student 506R Written Research Project

This paper will be your opportunity to research a topic of interest to you that is pertinent to conservation biology. You will be expected to synthesize relevant information from the primary literature (containing original, peer-reviewed research results) in a well-written paper. Collecting and adding additional new data would be welcomed, but is not required. You will be graded in two stages: topic and annotated references (20 October; 25 pts.), and final submission (06 December; 75 pts.). This paper should be written in the format (including citations and literature cited) of articles in Conservation Biology and should be 10+ double-spaced pages in length. Please discuss topics of interest with the instructors before proceeding.

Tentative 2005 Class Schedule (30 Class meetings)

See course website for updated topics and readings as the semester progresses.

Date

Topic (Reading; please complete before class; other readings will be added)

Aug 23

Introductions and photos
Syllabus, philosophy, and context
(Ecological footprint)

Aug 25

What is conservation biology?
(Van Dyke CH1; Noss 1999)
(optional: Meffe and Carroll 1997, Chap 1)
[assign role playing roles]

Aug 30

Conservation Ethics and Rationale
(Van Dyke CH3; Callicott, Chap 2 of Meffe and Carroll 1997)

Sep 01

Conservation Ethics and Rationale
(Van Dyke CH3; Leopold readings)

Sep 06

Biodiversity
(VanDyke CH4)

Sep 08

Role playing exercise (SDCP)

Sep 13

History of conservation biology/Legislation
(Van Dyke CH2)
Paul and Sherry Barrett (guest speakers; USFWS)

Sep 15

David Hall (guest speaker; desert aquatic populations [turtles, frogs, fish] and their conservation)

Sep 20

Biodiversity
(VanDyke CH4)

Sep 22

Exam 1 (through ~20 Sept. over CH1-4 and associated readings)

Sep 27

Paradigms and Theories
(Van Dyke CH5)

Sep29

Conservation Genetics
(Van Dyke CH6)
Hans-Werner Herrman (guest speaker; Grand Canyon snails, etc.)

Oct 04

Conservation Genetics
(Van Dyke CH6)

Oct 06

Biodiversity/Genetic Diversity
(Van Dyke CH4, CH6)

Rob Robichaux (guest speaker?; Hawaiian Silversword Alliance)

Oct 11

Populations
(Van Dyke CH7)

Oct 13

Invasive Species
(Van Dyke CH7)

Kathy Gerst (guest speaker; invasive riparian plants)

Oct 18

Population Viability Analysis, Minimum Viable Population Size
(Van Dyke CH7)

Oct 20

Habitat and Reserve Design
(Van Dyke CH8)

Bill Mannan (guest speaker, tentative)

Oct 25

Global Climate Change
(Walther et al. 2002, Hayhoe et al. 2004)

Oct 27

Exam 2 (through ~20 October; covers CH5-8 and associated readings)

Nov 01

Conservation Practices (Aquatic)
(Van Dyke CH9)

[assign role playing roles]

506R topic and annotated refs due

Nov 03

Sonoran Desert Conservation Plan
(Van Dyke CH7,8,10)

Bob Steidl (guest speaker, how the scientists came up with the proposed plan)

Nov 08

Conservation Practices
(Van Dyke CH10)

Nov 10

The four spikes

Guy McPherson (guest speaker)

Nov 15

Restoration Ecology/Practicing Conservation Biology
(Van Dyke CH11; Ehrlich, Lomborg, Naess, Rosenzweig, Soulé, etc.)

Student-led debate about conservation biology and restoration ecology

Nov 17

Exam 3 (through ~ 10 November, covers CH9-10, 13 and associated readings)

Nov 22

Professional Panel
(Van Dyke CH13)

Margi Brooks (NPS), Mima Falk (USFWS), Dave Gori (TNC)

Nov 24

Thanksgiving (**no class**)

Nov 29

Economics and Sustainable Development
(Van Dyke CH12)

Exhibit criteria due.

Dec 01

EXHIBIT (Public) - art/literature project due today, peer grading

Dec 06

Last Lecture
Wrap-Up, Sustainability, Course evaluations
506R Written Research Project due

Dec 13 (Tuesday)

Cumulative **Final Exam**: 1100-1300h