

**Beyond the Tragedy of the Commons:  
Managing Public Lands for Environmental Sustainability**

**Environmental Science 320 -- Topics in Environmental Science  
Block 3 -- November 1 - 24, 1999  
Classroom: Olin 167**

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**About This Course**

A "commons" can be defined as a system that produces a limited flow of goods, services, or other benefits that are shared by some group of users or consumers. Over the years since its publication in 1968, Garrett Hardin's essay "The Tragedy of the Commons" has provoked thought, debate, and controversy. In the last decade it has also spawned a great deal of research by social scientists, much of which suggests that there is no "tragedy" inherent to common-property resource management, and that people can learn to manage natural resource commons sustainably.

The general theme of this course is the sustainable use and management of shared natural resources. We will develop an understanding of how social policies and institutions can enable people to use the flows of goods and services that ecosystems can provide without overstepping ecological limits and damaging the capacity of an ecosystem to produce those flows of benefits. Sustainable natural resource management requires: (1) an understanding of how ecosystems function; (2) an understanding of how social systems function; and (3) an integration of this knowledge in the applied, decision-making context of public policy.

In this course we will be exploring the interface of natural science, social science, and even the humanities. We will seek to apply scientific principles to real-world challenges, problems, and decisions in an integrated, interdisciplinary way.

Some fundamental principles of both ecological and social science that are relevant to the sustainable environmental management, and an overview of environmental ethics, will be the subjects of study during the first week of the course. In Week 2 students will work in teams to investigate both ecological and social dimensions of a real commons. Field work in the course will take place in the San Luis Valley, where student teams will investigate management issues at several wetland sites owned by federal and state government agencies or a non-profit conservation organization. The information gathered by the class will then be integrated, in the form of assessment reports that make management recommendations for the case study sites.

Real-world situations are often extremely complex, and you may finish the course with more questions

than you had when you started. You will, however, develop a realistic appreciation for the challenges of sustainable environmental management, a better feeling for what we don't know, and a framework for asking the right questions. You will also develop a respect for the managers of public lands, whose jobs require them to make difficult and often contentious decisions, often with incomplete information.

## **Course Objectives**

- 1) Learn/review some fundamental principles of ecology and social science that are relevant to sustainable environmental management;
- 2) Develop an understanding of the diversity of values and ethical perspectives that underlie environmental decisions and choices;
- 3) Recognize and appreciate the complexity of real-life resource management situations;
- 4) Develop respect for the challenges faced by managers of public lands;
- 5) Learn about and practice some methods of gathering social and ecological information: and,
- 6) Develop recommendations for the managers of selected public lands in the San Luis Valley.

## **Class Format**

Class will begin every morning at 9:00 AM unless otherwise noted. We will usually have a combination of lecture-style presentations and class discussion. I plan to keep the "lecture" to the minimum necessary, and will rely heavily on you to keep up with the reading and contribute to discussions. Morning sessions will usually last until 12:00 noon.

On some days, as noted on the tentative schedule, we will also meet in the afternoon. Afternoon sessions will generally involve more diverse, flexible, and hands-on activities than morning sessions, including local field trips, small group work, and individual conferences.

The heart of the course will be a field trip to the San Luis Valley from November 8 - 12. We will stay at CC's Baca Campus in Crestone. Six teams of students (4-5 students per team) will act as interdisciplinary environmental consultants and will investigate a natural resources management situation at six sites:

- 1) Alamosa National Wildlife Refuge,  
managed by the U.S. Fish and Wildlife Service (FWS)
- 2) Monte Vista National Wildlife Refuge (also FWS);
- 3) Blanca Wetlands, managed by the Bureau of Land Management; and,
- 4) San Luis Lakes State Park and Wildlife Area, managed by the  
Colorado State Parks and Division of Wildlife; and
- 5) Mishak Lakes Wetland Preserve, managed by The Nature Conservancy
- 6) Great Sand Dunes National Monument, managed by the U.S. National Park Service

Teams will gather both social and ecological information about each site using a variety of techniques, as appropriate. They will interview managers, users, and neighbors at the sites. This information will then be synthesized by each team into a case study report, which will include management recommendations based on their findings. Each team will present its report both orally and in writing. Interested outsiders will be invited to the oral reports, and the written reports will be submitted to relevant management agencies and organizations.

In order to bring an international dimension to the course, I plan to take you vicariously, through slide shows, to a number of natural resources “commons” around the world, including national parks and other protected areas in China, Kenya, India, Tanzania, the United States, and Zimbabwe.

### **Tentative Schedule**

<u>Week 1</u>	<u>Topic/Activity</u>	<u>Reading</u>
Mon., Nov. 1	Course Introduction; Managing the Commons; “Investigating a Commons” Framework -- introduction	Byers; Byers
Tues., Nov. 2 AM	Baca Meals & Logistics; Ecological Principles & Sustainability	Botkin, Botkin
Wed., Nov. 3 AM PM	Social Principles & Sustainability Garden of the Gods Field Trip	Huber & Larkin book
Thu., Nov. 4 AM	Investigating a Commons framework -- review 10:30 AM Guest Lecture by Professor Walt Hecox, Economics Dept.: "The Economy of the San Luis Valley" Social research methods; role play interviews	Byers; Byers
Fri., Nov. 5 AM PM	Garden of the Gods Analysis Paper Due; GoG discussion; continue SLV planning; select teams & case study sites Teams organize & call contacts	

## Tentative Schedule -- continued

### Week 2

Mon., Nov. 8 AM	Depart for San Luis Valley (8:30 AM)
PM:	Briefing on National Wildlife Refuges and site visit; check into Baca
Tue., Nov. 9	All day: Team field research
Wed., Nov. 10	All day: Team field research
Thu., Nov. 11 AM	Teams compile notes
PM	Teams brief entire class at field sites
Fri., Nov. 12 AM	Check out of Baca; teams brief entire class at field sites
PM	Return to CC

### Week 3

Mon., Nov. 15 AM	Debrief field work; plan case study reports; Discussion of reading	Daily & Ehrlich; Goodland
Tues., Nov. 16	"Tragedy of the Commons" CD ROM Exercise	Hardin; Bromley; Oakerson
Wed., Nov. 17	"Tragedy of the Commons" readings discussion	Review Readings Packet
Thurs., Nov. 18 AM	Exam	
PM	Teams work on reports	
Fri., Nov. 19AM	Team progress reports presented in individual team meetings, to be scheduled	
PM	Teams work on reports	

### Week 4

Mon., Nov. 22	All day: teams finalize oral & written reports
Tue., Nov. 23 AM	Oral Reports
PM	Teams finalize written reports
Wed., Nov. 24 AM	<b>**WRITTEN REPORTS DUE BY NOON**</b>

## Reading Assignments

Required readings for this class include:

- *The San Luis Valley of Colorado: A Geographical Sketch*, by Thomas Huber and Robert Larkin. 1996. Colorado Springs, Colorado: The Hulbert Center for Southwestern Studies. (available at Bookstore);
- a **Reading Packet** containing the following articles from diverse sources (available at Bookstore);

### Reading Packet Contents

Botkin, Daniel B. 1990. Why the Elephants Died: Breakdown in the Management of Living Resources. Pp. 15-25 in: Daniel B. Botkin. *Discordant Harmonies: A New Ecology for the Twenty-first Century*. Oxford University Press: Oxford, U.K. 1990.

Botkin, Daniel B. 1990. "Oaks in New Jersey: Machine-Age Forests." Pp. 51-71 in Botkin, op. cit.

Byers, Bruce A. 1996. Values, Conservation, and Sustainability. Pp. 5-9 in: Bruce A. Byers. 1996. *Understanding and Influencing Behaviors in Conservation and Natural Resources Management*. Biodiversity Support Program: Washington, D.C. 1996.

Byers, Bruce A. 1999. Investigating a Natural Resource Commons: A Framework for Diagnosis and Prescription. Unpublished manuscript prepared for the Biological Sciences Curriculum Study, 1995; adapted for courses at Colorado College, October 1996; April 1999; October 1999. 13 pages.

Daily, Gretchen C., and Paul R. Ehrlich. 1992. "Population, Sustainability, and Earth's Carrying Capacity." Bioscience Vol. 42, No. 10, pp. 761-771.

Hardin, Garrett. 1968. "The Tragedy of the Commons." Science Vol. 68, pp. 1243-1248.

Bromley, Daniel W. 1992. "The Commons, Property, and Common-Property Regimes." Pp. 3-15 in: Bromley, Daniel W., ed. 1992. Making the Commons Work: Theory, Practice, and Policy. Institute for Contemporary Studies: San Francisco. ISBN 1-55815-217-2.

Oakerson, Ronald J. 1992. "Analyzing the Commons: A Framework." Pp. 41-59 in Bromley, 1992. op. cit.

- An unpublished article, to be distributed in class: Goodland, Robert. 1993. "The Only True Definition of Environmental Sustainability! Unpublished manuscript prepared for the Environment Department, The World Bank, Washington, D.C. 12 pages.

## Evaluation & Grading

Your grade in this course will be based on the following activities. Details about each of these activities will be given in class:



Letter grades will correspond with the common percentages, i.e.: 90-100% = A; 80-89% = B; 70-79% = C; 60-69% = D; less than 60% = F.

One component of class participation is attendance. You are expected to attend every class meeting; if you must be absent, please let me know in advance if possible.

## Honor Code

The Colorado College Honor Code applies to all aspects of this course. This includes, but is not limited to, doing your own work on written assignments, acknowledging all sources of ideas and information used in your work, and honestly and fairly evaluating the work of your classmates if asked to do so. Refer to the Constitution of the Honor Code if you have questions, or talk with me. Remember that it is the responsibility of the student to clarify ambiguous situations; in other words, if you are not sure, ask me.