

Lecture 04, 30 Aug 2007  
Ethics, Leopold

Conservation Biology  
ECOL 406R/506R  
University of Arizona  
Fall 2007

Kevin Bonine  
Cathy Hulshof



Upcoming Readings

today: [Textbook Ch. 3](#), [Leopold readings](#),  
[Callicott 1997](#) (from Meffe and Carroll)  
[Q1 due 30 Aug if you choose to answer.]  
Tues 04 Sept: [Text Ch. 4](#); [Costanza et al. 1997](#), [Driessen 2004](#)  
Thurs 06 Sept: [Walther et al. 2002](#), [Peak Oil Link](#),  
(optional: [National Geographic](#))

1

Conservation Biology Lab 406L/506L

Next Lab Friday 07 September  
1230 S or W side BSE  
(4th and Highland)  
Hat, water, sunscreen, close-toed shoes  
Readings on Course Website

07 September - Sabino Canyon  
VAN  
Flooding, Wilderness, Forest  
Management, Nuisance Wildlife



(Schedule stands, could not change our 28-30 September trip.)

2

Especially relevant for 506 students:

Conservation Seminar

If you are interested in participating in the  
Conservation Seminar (RNR696a – but you don't  
need to enroll) please attend [Wednesday at 3:30 in  
BSE 218](#).

Chris McDonald  
cmcdon@email.arizona.edu  
(contact for readings)

3

Public Water Lecture with Peter Gleick

Fresh water availability is a growing issue of concern across the world, but no where more than in arid lands. Tucson is no exception.  
Will projections of our water supply in the distant future - even in the next decade or two - be accurate? How will prolonged drought affect both water quantity and quality? What impacts will water supply have on the region's economic viability?

Sustainable Tucson is co-host of a public lecture by international water expert, Peter Gleick, along with the Water Resources Research Center (WRRC) and Institute for the Study of Planet Earth (ISPE) at the University of Arizona, and the Southern Arizona Leadership Council (SALC).

A [MacArthur Fellow](#) and widely published in leading scientific journals, Dr. Peter Gleick is one of the world's top experts on the impacts of climate change on water supply. His work with communities and governments across the Southwest and the world brings a broad perspective to the local discussion.

How can we define [sustainable water policies](#), based on sound laws and science? To what extent will water transfers and markets - the economics of shifting water - help us reconcile growth and supplies which are limited, keeping in mind that global warming, as well as land-use changes, will likely affect both surface and groundwater systems?

Sustainable Tucson believes Dr. Gleick's vision can help inform local planning by bringing the experience of many communities to bear on Tucson's creative solutions to long-term water security.

Dr. Gleick will address water experts and other leaders at the Arizona Hydrologic Society's regional conference, "Sustainable Water, Unlimited Growth, and Quality of Life: Can We Have It All?" to be held August 27 - 30 in Tucson.

The joint planning of this public lecture amongst university departments, civic, business, and community groups, points to exciting new dialogue over water and sustainability taking place in our community.

The lecture will take place in Tucson on August 30, at 7:30 p.m. at Temple Emanu-El - 225 N. Country Club Rd.

Contact [Madeline Kiser](#) ( [mkiser@dakotacom.net](mailto:mkiser@dakotacom.net) )  
or [Susan Williams](#) ( [susanleewilliams@cox.net](mailto:susanleewilliams@cox.net) ) for more information.

4

Plastic Trees  
in Los Angeles?

knowledge -> advocacy?



" Perhaps our grandsons,  
having never seen a wild  
river, will never miss the  
chance to set a canoe in  
singing waters."

-Leopold

Values, Ethics, Philosophy...

Rolston Essay (p. 35 in Callicott Chapter)

-species vs. species in the system  
(definition of species)



-value of evolutionary trajectory

-extinction and doors  
(temporal and spatial scales)



Role of scale... (context of disturbance and extinction)



Anthropogenic perturbations:

...fast rate and large spatial scale.

(Cited in Callicott 1997)

7

*Science*, Vol 162, Issue 3859, 1243-1248, 13 December 1968  
**The Tragedy of the Commons**  
**Garrett Hardin**

The tragedy of the commons develops in this way. Picture a **pasture** open to all. It is to be expected that each herdsman will try to keep as many cattle as possible on the commons. Such an arrangement may work reasonably satisfactorily for centuries because tribal wars, poaching, and disease keep the numbers of both man and beast well below the carrying capacity of the land. Finally, however, comes the day of reckoning, that is, the day when the long-desired goal of **social stability** becomes a reality. At this point, the inherent logic of the commons remorselessly generates tragedy. As a rational being, each herdsman seeks to maximize his gain. Explicitly or implicitly, more or less consciously, he asks, "What is the utility to me of adding one more animal to my herd?" This utility has one negative and one positive component.

1) The positive component is a function of the increment of one animal. Since the herdsman receives all the proceeds from the sale of the additional animal, the positive utility is nearly +1.

2) The negative component is a function of the additional overgrazing created by one more animal. Since, however, the effects of overgrazing are shared by all the herdsman, the negative utility for any particular decision-making herdsman is only a fraction of -1.

Adding together the component partial utilities, the rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another; and another. . . . But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the **tragedy**. Each man is locked into a system that compels him to increase his herd without limit--in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.

Values, Ethics, Philosophy...

Ethics:  
 constrain self-serving behavior in deference to some other good

Tragedy of the Commons

Role of religions?  
 interpretation...

8

Judeo-Christian Tradition

Intrinsic value by divine decree.  
 Noah saving "species".

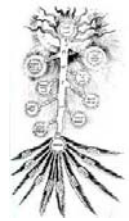
Islam

No separation of church and state.  
 Unity, Trusteeship, Accountability.

Hinduism

Core of all being is one reality, *Brahman*.  
*Prakrti*; matrix of the material creation

Land Sabbath, Jubilee?



10

Buddhism

Limit use of resources.  
 Nirvana: self+surroundings

Jainism

Each living thing has a soul.

Taoism

The way of nature; don't buck it.



11

Iroquois



consider the impact of their decisions on the seventh generation to come

Chipko (Hindu links)

The ultimate tree-huggers.  
 Himalayas of India



**Table 3.3** Seven Major Worldviews that Shape Environmental and Conservation Ethics

| WORLDVIEW                                 | TYPE OF VALUE               | MOTIVATION FOR CONSERVATION   |
|---|-----------------------------|---|
| 1. Judeo-Christian stewardship            | Theocentric                 | Preserve the ecological systems that God has commanded humans to care for, as exemplified by the placing of man in the garden to "work it and take care of it" (Genesis 2:15). Humans should respect and not destroy God's handiwork.   |
| 2. Deep ecology and related value systems | Ecocentric                  | The rights or intrinsic values attributed to nonhuman nature place limitations on human prerogatives to use or alter nature and must be respected.  |
| 3. Transformational/transcendentalism     | Anthropocentric             | Respect the spiritual value of nature, which provides solace to consider life's deepest questions and can cure human alienation.  |
| 4. Constrained economics                  | Anthropocentric             | Resource use is primarily a problem of human economics. Because avoiding irreversible damage to the environment is beneficial, the environment should be preserved when the economic cost is not too great. Low risk taking, common sense, and avoiding irreversible damage to the environment are justification. |
| 5. Scientific naturalism                  | Science-centered/ecocentric | Scientific theories of evolution and ecology reveal necessary limits on population growth and violence to the land. Dynamism and contextualism are emphasized.  |
| 6. Ecofeminism                            | Anthropocentric/feminist    | Because man's domination over nature is symbolic of his domination over women, preserving the environment fights to cure both environmental and social problems.  |
| 7. Pluralism/pragmatism                   | Anthropocentric             | Philosophy, although it can serve as a tool to solve moral problems, is not emphasized. Rather, practical problem solving and ethical principles are used to address environmental issues.  |

Norton, B. G. 1994. *Toward unity among environmentalists*, 107-99. New York: Oxford University Press.

13

Van Dyke 2003

Personal Example?  
Virtue?  
(Van Dyke p. 75)

14

Five axioms of consensus among environmentalists:

"Conservation may be a sign of personal virtue but it is not a sufficient basis for a sound, comprehensive energy policy."

1. Dynamism
2. Interrelatedness
3. Nested systems
4. Creative processes
5. Differential fragility

-Vice President R. Cheney, April 2001

Norton 1991 (see Van Dyke p. 72)

15

16

Debate 20 Sept 2007:  
Should the flat-tailed horned lizard (*Phrynosoma mcallii*) be ESA listed?

Three groups – one will debate, another will evaluate, third will observe, then we rotate.

|     |                     |
|-----|---------------------|
| 406 | Debate 1 (20 Sept.) |
|     | Group A debate      |
|     | Group B evaluate    |
|     | Group C observe     |
|     | Debate 2 (23 Oct.)  |
|     | Group A observe     |
|     | Group B debate      |
|     | Group C evaluate    |
|     | Debate 3 (15 Nov.)  |
|     | Group A evaluate    |
|     | Group B observe     |
|     | Group C debate      |

- Debate 1 (20 Sept.)
- 506 A assist
- 506 B assist
- 506 C observe
- Debate 2 (23 Oct.)
- 506 A assist
- 506 B observe
- 506 C assist
- Debate 3 (15 Nov.)
- 506 A observe
- 506 B assist
- 506 C assist

17

Horned Lizard Debate (20 Sept 2007):

506 A and 506 B look for relevant interest groups and readings, think about debate "rules".

Group A will also look for relevant interest groups, confer about resource leads with 506 A and B.

Exchange contact information, choose a leader?, divide up tasks, set timeline, practice with your 506 mentors, confer with instructors.

Possible Interest Groups: US Govt, USFWS, AZ, CA, BLM, USFS, CBD, US Military, etc.  
Information: Federal Register, CBD, BLM, USFWS

18

Discussion:

1. How do conservationists respond to the question, "What good is it?"
2. How do we verify that humans, or anything, has intrinsic value?
3. "Enclosed/Private" Goods, or "Common" Goods  
- Which of these is a better approach for conservation? Why?
4. What is the conservation role of the world's religions?

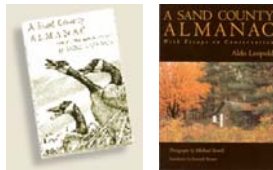
"Objectivity is only possible in matters too small to be important, or in matters too large to do anything about." (p. 226)

-Leopold

19

20

1887-1948



<http://www.aldoleopold.org/Biography/Biography.htm>  
Aldo Leopold Foundation

Aldo Leopold:

Thinking Like a Mountain  
Escudilla

The Land Ethic

The Outlook for Farm Wildlife  
The Land-Health Concept and Conservation

22

Aldo Leopold

"An ethic, ecologically, is a limitation on freedom of action in the struggle for existence.

An ethic, philosophically, is a differentiation of social from anti-social conduct."

(p. 238)

Aldo Leopold Land Ethic

-social evolution (social disapproval for wrong actions)  
-land ethic enlarges the community to include biota

-human as plain member and citizen, not ruler

-Conquerer self defeating because falsely thinks s/he understands how the system works and can control it

23

24

Leopold Land Ethic

- Property vs. propriety
- Role of land [biology] in human history (Diamond, Guns Germs and Steel)
- Sacrifice
- Obligation of private landowner
- Livestock, Violence
- Economics?  
Farm as Factory or Place to Live?

25

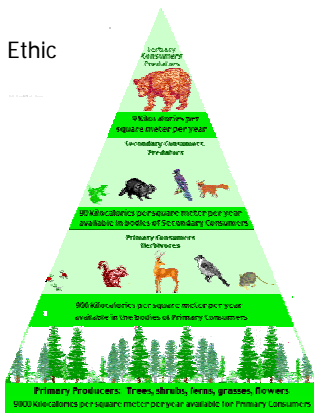
Aldo Leopold Land Ethic

- What is "land-health?"
- processes
- evolutionary/ecological biology
- complexity & quality
- invasives

26

Aldo Leopold Land Ethic

-land pyramid



"a thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise"

Aldo Leopold

28

Leopold

*Thinking like a mountain*  
" a mountain lives in mortal fear of its deer"

*Escudilla*  
progress?  
"It's only a mountain now."

The planet will survive, will we?

29

"In our attempt to make conservation easy we have made it trivial" (p.246)

-Leopold

30

## The Land-Health Concept and Conservation

Conservation is a series of ecological predictions made by beginners because ecologists have failed to offer any.

Leopold, p. 220

“Whether you will or not

You are a King, Tristram, for you are one

Of the time-tested few that leave the world,

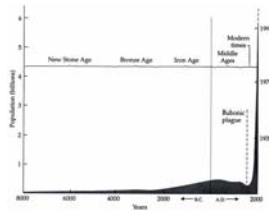
When they are gone, not the same place it was.

Mark what you leave.”

As quoted in Leopold, 1949  
p. 261 (The Land Ethic)

31

## Human Population?



33