

Housekeeping, 31 August 2006

If not in lecture last week, please see us after class.

Lecture 04, 31 Aug 2006
Noss 1999, Ch3, Callicott

Conservation Biology
ECOL 406R/506R
University of Arizona
Fall 2006

Kevin Bonine
Kathy Gerst

Values and Ethics in Conservation



Ch3 and Leopold readings for Tuesday
No lab this Friday (01 Sept 2006)

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Upcoming Readings

today: Noss 1999, Textbook chapter 3; Callicott 1997
Tues 05 Sept: Textbook Ch. 3, Leopold readings
Thurs 07 Sept: Text Ch.4, Costanza 1997, Driessen 2004

Short oral presentations

31 Aug Kevin Gilliam and Whitney Henderson
05 Sept open
07 Sept open

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Kevin Gilliam and Whitney Henderson (take 2)...

Carl Bock, SNR Seminar, 30 Aug 2006



National Audubon Society
Appleton-Whittell Research Ranch
Elgin, Arizona

Grazed Ungrazed

Exurban

	12	12
~Ranch	12	12

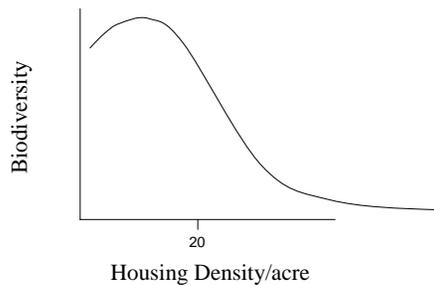
~Ranch

Grass, Oak, Mesquite

3

4
Cori, Grant, Allison

Sonoita Valley, Carl Bock, working hypothesis



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Noss 1999

Is there a special conservation biology?

Origins

Soulé et al. 1978+

SCB 1986

Conservation Biology 1987



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Noss 1999

1. Are there principles of conservation biology?
2. Is advocacy appropriate?
3. Are we educating conservation biologists appropriately?
4. Is conservation biology distinct from other disciplines?

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Noss 1999

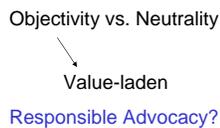
Principles:

1. Species with large ranges safer than spp. with small.
2. Prefer large blocks of habitat and large populations.
3. Prefer habitat blocks in close proximity to each other.
4. Prefer unfragmented habitat. Reserve Design
5. Prefer interconnected habitat to isolated.
6. Prefer roadless and inaccessible habitat.
7. **PRECAUTIONARY PRINCIPLE**
-If we don't have enough data, err on side of caution.
8. Prefer ecosystem approach to species approach.
9. Consider biodiversity hotspots.

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Noss 1999

2. Is advocacy appropriate?



4. Is conservation biology distinct from other disciplines?

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Normative Postulates:

1. Diversity of organisms is good
2. Ecological complexity is good
3. Evolution is good
4. Biotic diversity has intrinsic value

Michael Soule, 1985, 1986 (see p. 57 Van Dyke)

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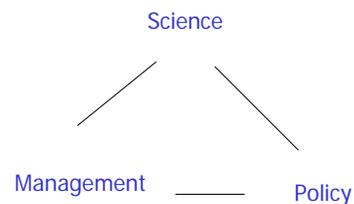
Ethical Advocacy?

p.117, Noss 1999:
 tropical rainforest
 vs.
 economic development program

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Noss 1999

3. Are we educating conservation biologists appropriately?



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Pattern and Generality vs. Special Case



p. 116, Noss 1999

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Hutchinson 1948, as cited in Noss 1999



We should worry about global warming as a result of altering geochemical cycles

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Values, Ethics, Philosophy...

Systematic organization of values
Basis for estimation of worth

VALUE OF BIODIVERSITY

- Instrumental/utilitarian
- Intrinsic/inherent



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Table 2.1
Four Categories of the Instrumental Value of Biodiversity

Category	Examples
Goods	Food, fuel, fiber, medicine
Services	Pollination, recycling, nitrogen fixation, homeostatic regulation
Information	Genetic engineering, applied biology, pure science
Psycho-spiritual	Aesthetic beauty, religious awe, scientific knowledge

Callcott 1997

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Values, Ethics, Philosophy...

Monetizing

- discount rate
- rates of growth and reproduction

Economic development short sighted?

BCA

Valuation methods

- willingness to pay/ accept
- travel cost
- existence value
- contingent valuation
- bequest value



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Madagascar Periwinkle Argument

(Callcott p. 30)

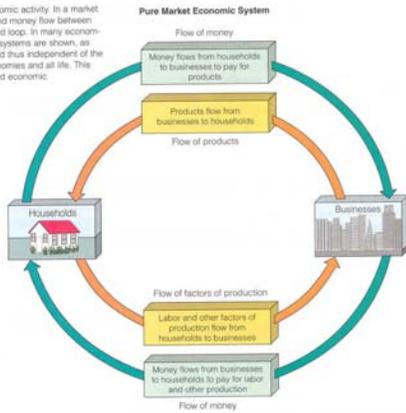
"Arrogant and Trivial"?



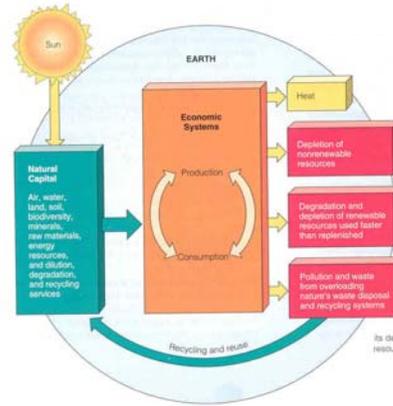
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Figure 2-2 Conventional view of economic activity. In a market economic system, economic goods and money flow between households and businesses in a closed loop. In many economics textbooks, such market economic systems are shown, as here, as if they were self-contained and thus independent of the natural resources that support all economies and all life. This model reinforces the idea that unlimited economic growth of any kind is sustainable.

-14-1 Miller 2003



Conventional Economics



Ecological Economics

Figure 2-3 Ecological view of economic activity. Ecological economists see all economies as human subsystems that depend on resources and services provided by the sun and the earth's natural resources. A consumer society devoted to economic growth to satisfy ever-expanding wants assumes that our technological cleverness will allow us to find (1) substitutes to overcome any limits on resources and (2) ways to keep pollution and environmental degradation at acceptable levels. To ecological economists, such a society is unsustainable because of its depletion and degradation of natural resources, many of which have no substitutes.

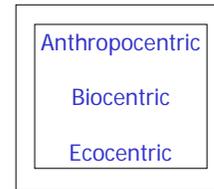
-14-2 Miller 2003

Ecological vs Conventional Economics

Characteristic	Unsustainable Economic Growth	Environmentally Sustainable Economic Development
Production emphasis	Quantity	Quality
Natural resources	Not very important	Very important
Resource productivity	Inefficient (high waste)	Efficient (low waste)
Resource throughput	High	Low
Resource type emphasized	Nonrenewable	Renewable
Resource fate	Matter discarded	Matter recycled, reused, or composted
Pollution control	Cleanup (output reduction)	Prevention (input reduction)
Guiding principles	Risk-benefit analysis	Prevention and precaution

Figure 2-4 Comparison of unsustainable economic growth and environmentally sustainable economic development.

metrc



Evolution of rights...

monarchs
white males
"all men"
humanity
sentient beings
nature?



"Bonuses?"
(Callcott p. 47)

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Shift Burden of Proof/Responsibility (precautionary principle)

SMS (safe minimum standard)

	~Developers	~Conservationists
1 Instrumental		B of P
2 Intrinsic	B of P	
3 BCA		B of P
4 SMS	B of P	

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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 Callcott Chapter)

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



-value of evolutionary trajectory

-extinction and doors
(temporal and spatial scales)



Values, Ethics, Philosophy...

Ethics:

constrain self-serving behavior in
deference to some other good

Tragedy of the Commons

Role of religions?
interpretation...

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Personal Example?
Virtue?

(Van Dyke p. 75)

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 herdsmen, 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.

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

-Vice President R. Cheney, April 2001

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Judeo-Christian Tradition

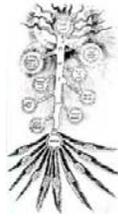
Intrinsic value by divine decree.
Noah saving "species".

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



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Buddhism

Limit use of resources.
Nirvana: self+surroundings

Jainism

Each living thing has a soul.

Taoism

The way of nature; don't buck it.



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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. Transformationalist/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. Pluralist/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. 1991. *Toward unity among environmentalists*, 197-99. New York: Oxford University Press.

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Van Dyke 2003

Role of scale...



Five axioms of consensus among environmentalists:

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

Norton 1991 (see Van Dyke p. 72)

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