

Lecture 03, 03 Sep 2003

What is Conservation Biology?  
Conservation Ethics, Values, and Rationale

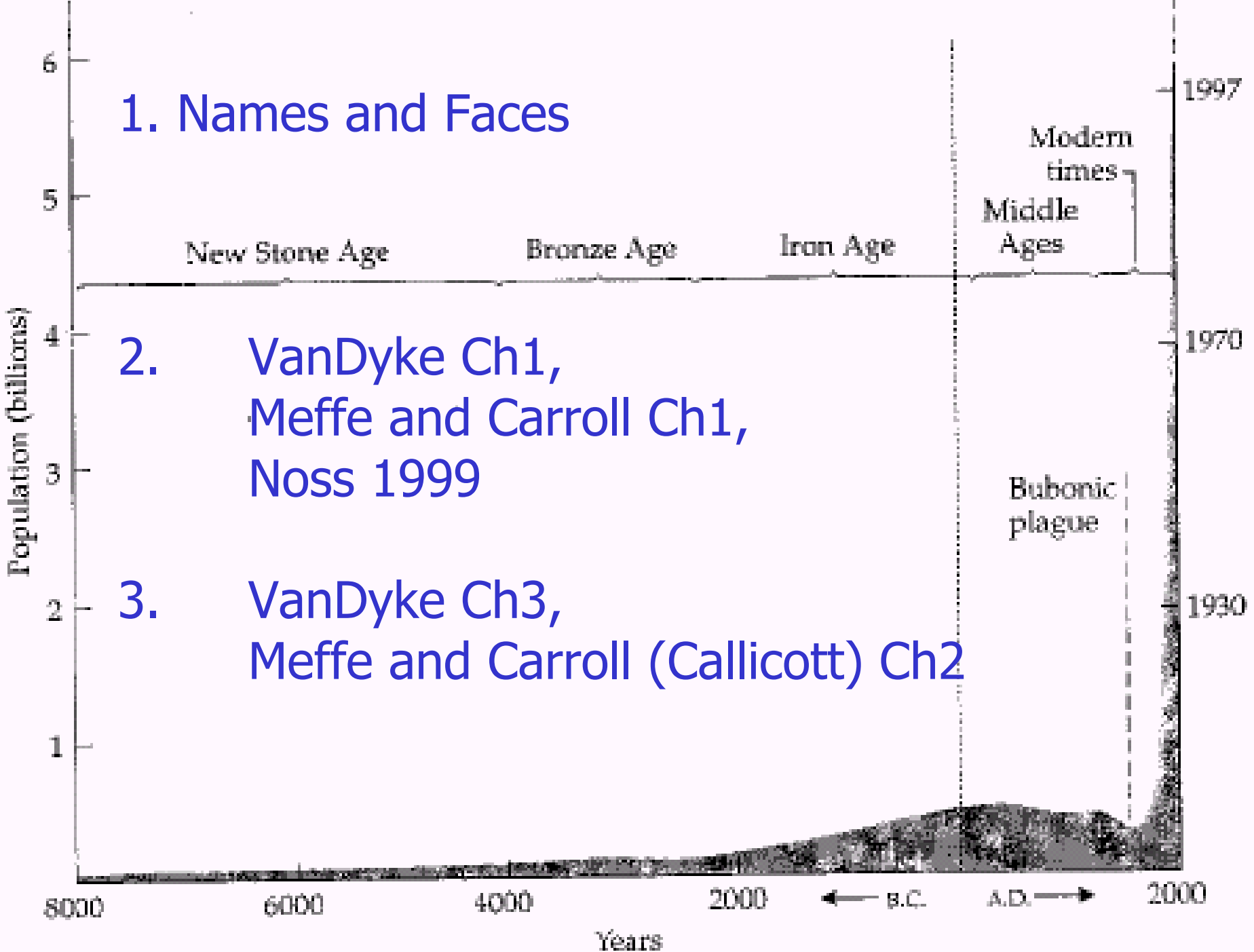
Conservation Biology  
ECOL 406R/506R  
University of Arizona  
Fall 2003

Kevin Bonine

# 1. Names and Faces

2. VanDyke Ch1,  
Meffe and Carroll Ch1,  
Noss 1999

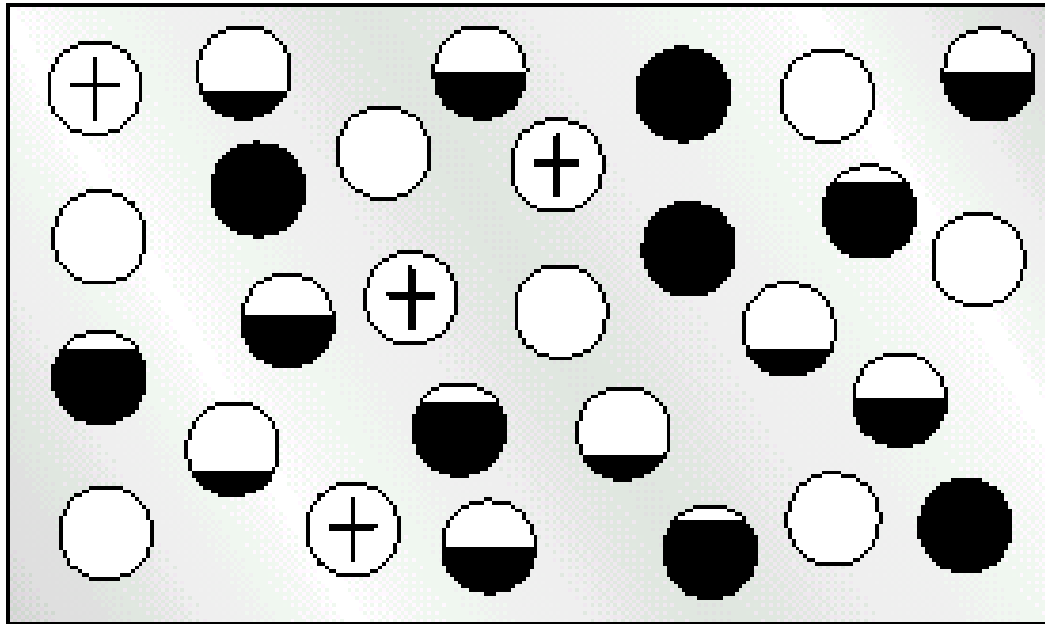
3. VanDyke Ch3,  
Meffe and Carroll (Callicott) Ch2



Journal of Wildlife Management (1937)  
Wildlife Society Bulletin

VS.

Conservation Biology  
Biological Conservation



**Figure 1.8**

Diagrammatic representation of an arrangement of local populations ("metapopulation") based on Andrewartha and Birch (1954). Empty circles represent favorable habitats that individuals do not occupy. Partially or completely filled circles represent favorable habitats and relative densities of individuals in them as a proportion of the habitat's maximum capacity. Crosses indicate habitats in which local populations recently became extinct.

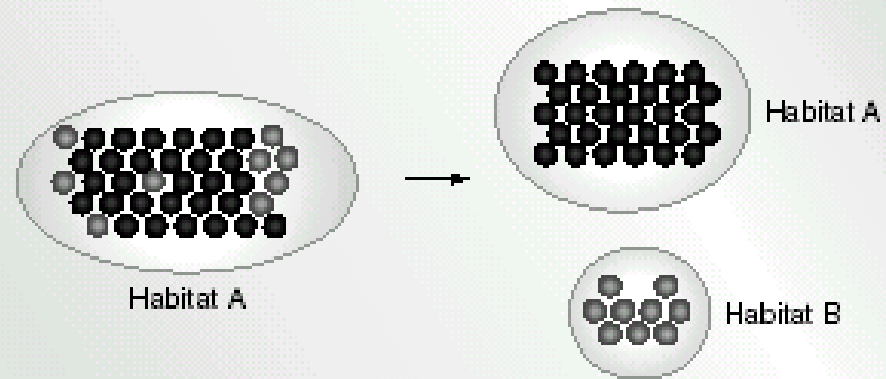
-Metapopulations

-Island Biogeography  
MacArthur and  
Wilson 1963

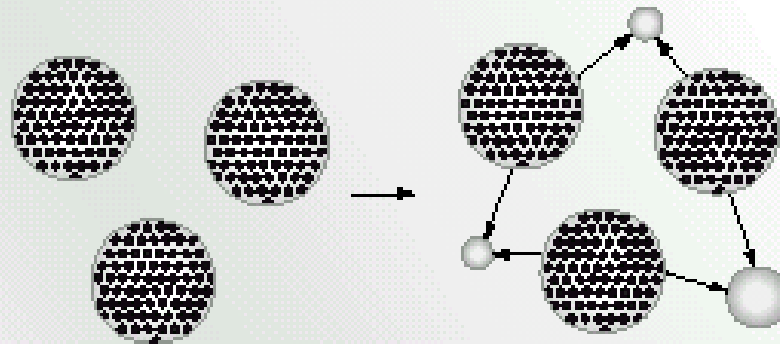
-Testable Hypotheses

-Thresholds

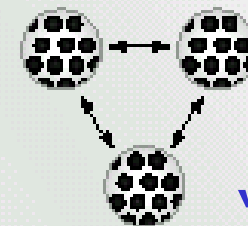
A. A single large source population produces new individuals that migrate to and colonize smaller isolated areas.



B. Larger areas with persistent populations supply colonists to smaller areas.



C. Individuals of the metapopulation move among small but equivalent subpopulations.



“corridor craze”

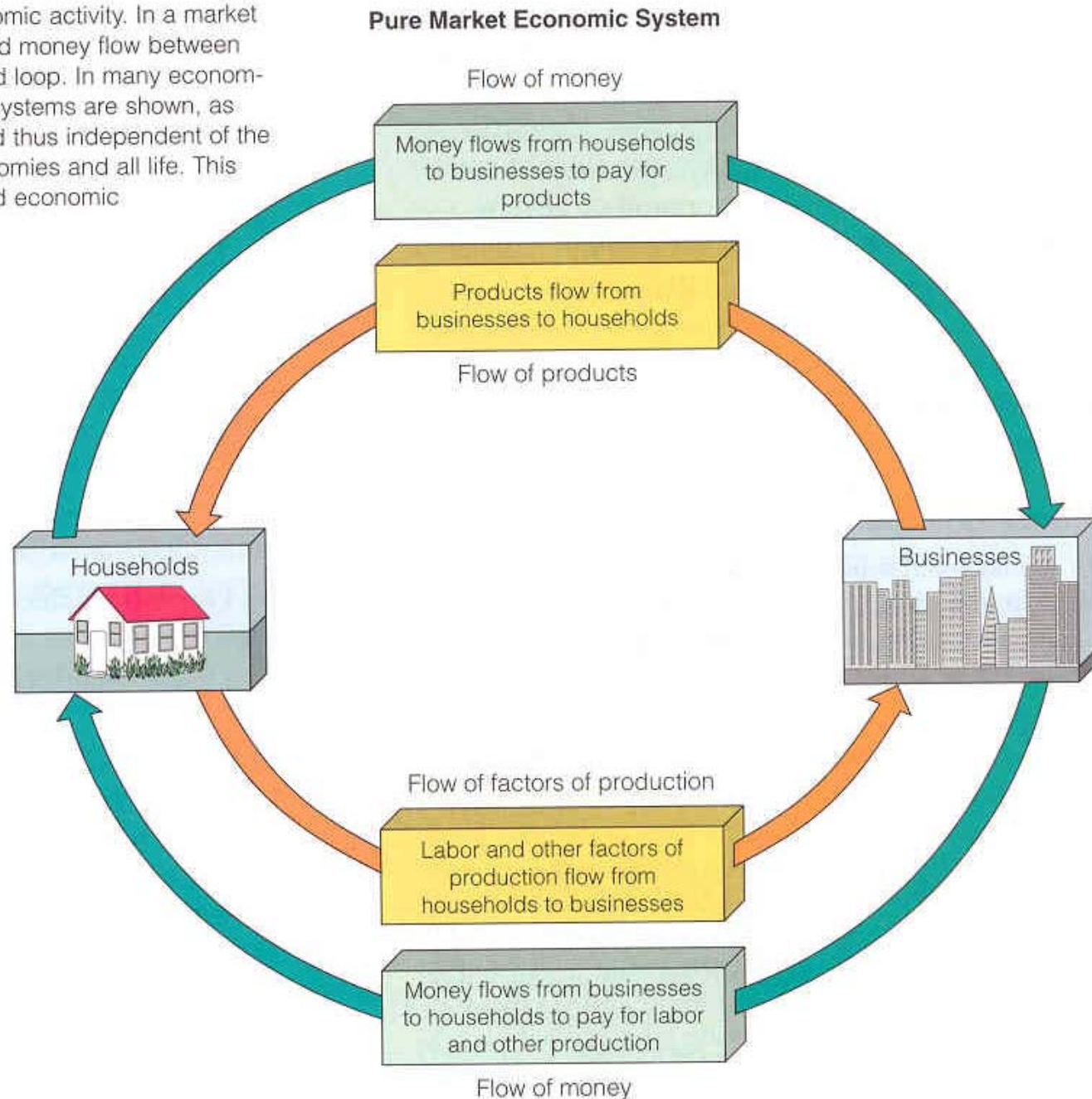
**Figure 1.9**

Van Dyke 2003

Three variations of the metapopulation concept. Although different in detail, all represent metapopulations as spatially distinct groups (subpopulations) that disperse to or among physically separated habitats.

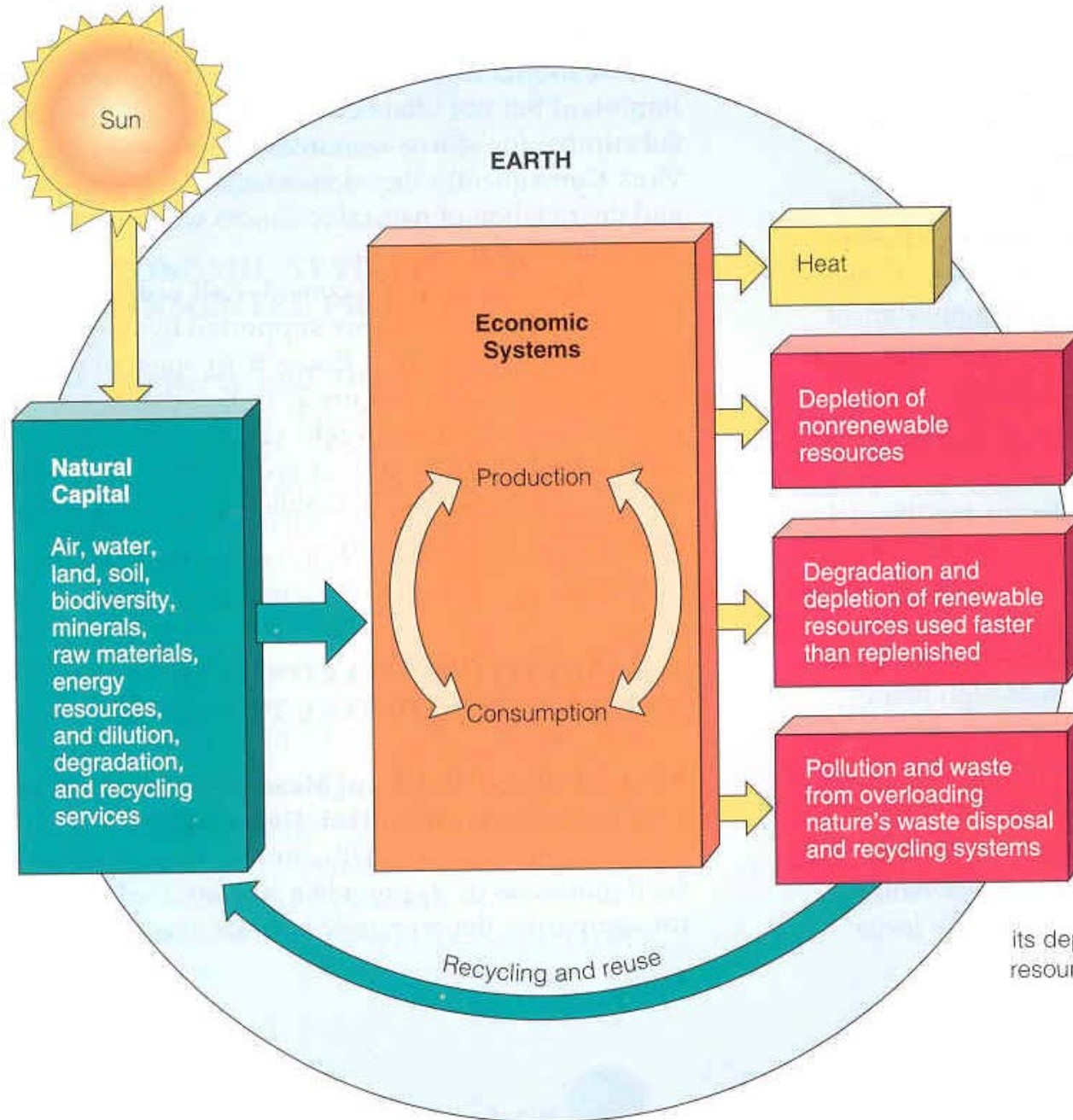
**Figure 2-2** *Conventional view of economic activity.* In a market economic system, economic goods and money flow between households and businesses in a closed loop. In many economics textbooks, such market economic systems are shown, as here, as if they were self-contained and thus independent of 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.

# Ecological vs Conventional Economics

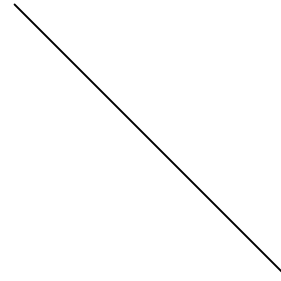
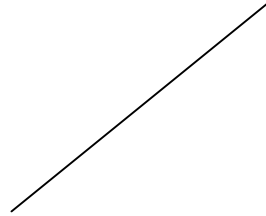
Characteristic	Unsustainable Economic Growth	Environmentally Sustainable Economic Development
Production emphasis	Quantity	Quality
Natural resources	Not very important	Very important
Resource productivity	Inefficient (high waste)	Efficient (low waste)
Resource throughput	High	Low
Resource type emphasized	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

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



Science



Management



Policy

No Pristine Wilderness

Human Economic Development

1 Consumption

2 Human Population Growth

3 Extinctions

4 Global Change

What should we do?

Precautionary Principle

Shift Burden of Proof/Responsibility  
(~Judicial System)

Ethics, Values, Philosophy...

VALUE OF BIODIVERSITY

Instrumental/utilitarian

Intrinsic/inherent

## 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

1. Should conservation biologists explain the value of biodiversity in purely instrumental terms or should they also include reasons invoking intrinsic value?
2. How respond to the question of “What good is it?” (e.g. Forbush’s lousewort)
3. How do we know that humans, or anything, have intrinsic value?
4. Discuss Leopold’s quote: “ Perhaps our grandsons, having never seen a wild river, will never miss the chance to set a canoe in singing waters.”
5. How does this quote from Leopold: sit with the idea of intrinsic value?

*For one species to mourn the death of another is a new thing under the sun. The Cro-Magnon who slew the last mammoth thought only of steaks. The sportsman who shot the last pigeon thought only of his prowess. The sailor who clubbed the last auk thought of nothing at all. But we, who have lost our pigeons, mourn the loss. Had the funeral been ours, the pigeons would have hardly mourned us. In this fact . . . lies objective evidence of our superiority over beasts (Leopold 1966:117).*

END

# Ethics, Values, Philosophy...

Monetizing

discount rate

rates of growth and reproduction

Valuation methods

BCA