

Lecture 02, 26 Aug 2004
Van Dyke Ch1, Noss 1999

Conservation Biology
ECOL 406R/506R
University of Arizona
Fall 2004

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Conservation Biology 406R/506R

1. 3x5 cards/photos
2. Lab Friday (tomorrow)
9am S side BSE (4th and Highland)
Hat, water, sunscreen
Tumamoc Hill website:
<http://www.paztcn.wr.usgs.gov>
3. Conservation Biology as a Discipline
-Van Dyke Ch 1
-Noss 1999



'3x5' card

- Registered? 406R or 506R? In Lab?
- Name (and what you prefer to be called)
-Distinguishing characteristic
- Email address
- Year in school
- Major
- Relevant courses taken, or research projects, etc.
- Why are you taking this course?

hold until photo



Figure 1.5 The first issue of the journal *Conservation Biology*, published in May 1987. (Photograph courtesy of E. P. Pister.)
Meffe and Carroll 1997

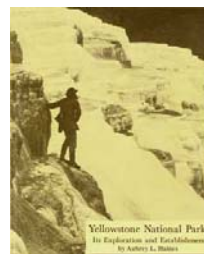
What is Conservation Biology?

When and what were the origins of the discipline?

Ethical and Conceptual Roots

1. Intrinsic Value
2. Ecosystem services
3. Aesthetic, spiritual enrichment

It all starts in Colter's Hell...



Thomas Moran on the Mammoth Terraces
Photograph by William H. Jackson, 1871.
(National Park Service)



John Colter 1807
(~Lewis and Clark)
Yellowstone Area

Romantic-Transcendentalist Ethic
vs.
Resource Conservation Ethic

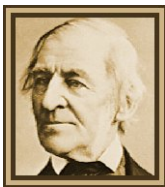
Preservation
vs.
Conservation

-Romantic-Transcendentalist Ethic:

Ralph Waldo Emerson
Henry David Thoreau
John Muir
-Sierra Club 1892
-NGO
-Education, Lobby, Law/Politics

Yellowstone National Park 1872
Yosemite National Park 1890

ESA 1917 --> Nature Conservancy 1950



Ralph Waldo Emerson
1803-1882

A Successful life

"To laugh often and much; to win the respect of intelligent people and the affection of children; to earn the appreciation of honest critics and endure the betrayal of false friends; to appreciate beauty; to find the best in others; to leave the world a bit better, whether by a healthy child, a garden patch, or a redeemed social condition; to know even one life has breathed easier because you have lived."

- Ralph Waldo Emerson -



Henry David Thoreau
(1817-1862)

"Many go fishing all their lives without knowing that it is not fish they are after."

"Beware of all enterprises that require new clothes. "

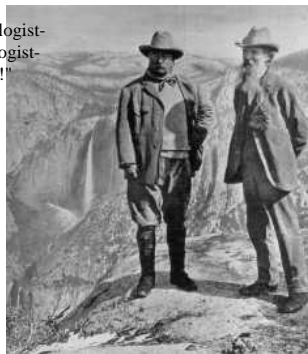
"It is not worthwhile to go around the world to count the cats in Zanzibar. "

"Wherever a man goes, men will pursue him and paw him with their dirty institutions, and, if they can, constrain him to belong to their desperate oddfellow society. "

"poetico-trampo-geologist-
botanist and ornithologist-
naturalist etc. etc. !!!!!"



John Muir
(1838-1914)



Teddy Roosevelt
(president 1901-1909)

~resource conservation ethic:



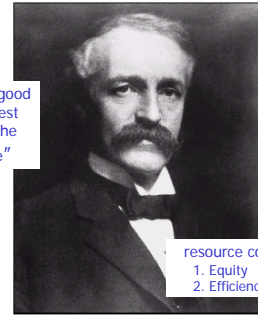
Figure 1.3 VanDyke 2003
Theodore Roosevelt, the twenty-sixth president of the United States (1901-1909), greatly supported the role of the federal government in conservation.

"To Roosevelt, it was clear that a handful of individuals and their companies were reaping most of the profits from natural resources that rightfully belonged to all citizens." Van Dyke 2003, p. 10

early 1900s "Trustbuster"

Resources for use, but forever.

"The greatest good for the greatest number for the longest time"



Gifford Pinchot

resource conservation ethic:
1. Equity
2. Efficiency

Figure 1.4 VanDyke 2003
Gifford Pinchot, early head of the U.S. Forest Service and father of the resource conservation ethic. From an original staff of only 123 in 1898, Pinchot built the Forest Service to an organization of 1,500 people administering 150 million acres of public land within 10 years.

Sustainable Use
Maximum Sustained Yield

USE those resources!

Modern Conservation Biology
National Parks
U.S.

Transferable?



Aldo Leopold

Game Management 1932

A Sand County Almanac (1966)
-evolution/ecology land ethic

Figure 1.5 Van Dyke 2003
Aldo Leopold, early twentieth century conservationist and father of the modern land ethic.

Land Health and the A-B Cleavage

Commodities (A)
vs. Processes (B)

Rachel Carson
Silent Spring 1962

- Bioaccumulation
- Levels and scale
- Environmental degradation threaten human health
- Increased Public Awareness



Figure 1.6 Van Dyke 2003
Rachel Carson, U.S. Fish and Wildlife Service biologist and author of Silent Spring (1962), a seminal book in the modern environmental movement.

Problems Addressed by Conservation Biologists:

- 1 Genetic Diversity
variation, inbreeding, drift, hybridization
- 2 Species
MVP, PVA
small populations
declining populations
metapopulations
- 3 Habitat
loss, fragmentation, isolation, heterogeneity
- 4 Ecosystem Processes
scale
- 5 Human sustainability
the crux

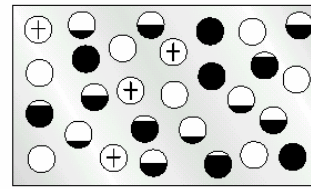


Figure 1.8
Diagrammatic representation of an arrangement of local populations ("metapopulation") based on Andriewartha and Birch (1954). Empty circles represent favorable habitats that individuals do not occupy. Partially or completely filled circles represent favorable habitats and relative densities of individuals in them as a proportion of the habitat's maximum capacity. Crosses indicate habitats in which local populations recently became extinct.

Van Dyke 2003

-Metapopulations
-Island Biogeography
MacArthur and
Wilson 1963

-Testable Hypotheses
-Thresholds

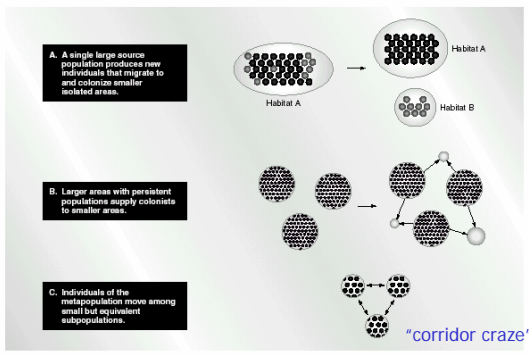


Figure 1.9 Van Dyke 2003
These variations of the metapopulation concept. Although different in detail, all represent metapopulations as spatially distinct groups (subpopulations) that disperse to or among physically separated habitats.

END