

## FRWS 4900: Managing Dynamic Ecological Systems

**Instructor:** Fred Provenza, BNR 277; Office Hours 12:00-1:00 T, H

**Teaching Assistant:** Ryan Shaw, BNR 221; Hours 12:00-1:00 T, W

**Course Overview:** This course explores what it means to manage dynamic ecological systems, including anything from one's personal life to a business to natural resources. The course emphasizes how people from diverse disciplines – forestry, geography, outdoor recreation, rangeland resources, watershed, wildlife, fisheries – benefit from integrating philosophical and cultural beliefs with behavioral principles and processes to manage ecological systems. The course is taught at three levels: 1) philosophy, 2) principle and process, and 3) discipline and practice.

*Philosophical Perspectives.* Interconnectedness and dynamism, though often ignored in managing landscapes, are an integral part of human thought from eastern and western mythologies to quantum and relativistic physics to cosmology, geology, ecology, and biology. Highlighting these perennial philosophies and their implications are the foundations for the course.

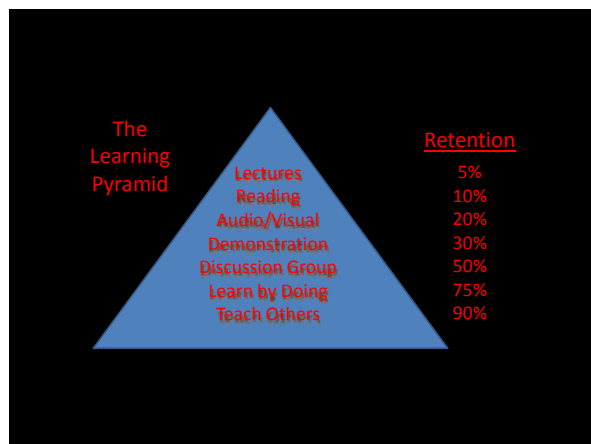
*Behavioral Principles.* Behavioral principles and processes -- manifest culturally, politically, ecologically, and economically -- provide understanding for how to manage with compassion and empathy for the diverse values of different peoples and the resources they care about.

*Disciplines and Practices.* Knowledge of perennial philosophies and behavioral principles and processes can be applied to management through disciplines -- personal mastery, surfacing and testing mental models, team building, developing shared vision, systems thinking -- that must be mastered to manage dynamic systems efficiently and effectively.

We will integrate philosophies, principles, processes, practices and disciplines within the framework of what it means to be locally adapted to a landscape. From time to time, innovative land managers will discuss how they face the challenges and opportunities of managing in an evolutionary sense the dynamic interactions among ecological, economic and social systems.

**Course Requirements and Grading:** When professionals are asked which talents they most value for managing natural resources, they emphasize communication skills. Your grade will be based on writing and speaking skills because the ability to interact with people from different disciplines is the most important talent you can develop. Meaningful interactions lead to better management of natural resources. Communication skills involve not only the ability to write clearly and concisely, but also to participate in dialogue and discussions, as many people from different backgrounds typically interact to manage natural resources. The written assignments, participation in class discussions and final collectively will be worth 800 points.

People learn least from lectures and reading, more from audio/visual presentations and demonstrations, more from discussions and participating by doing, and we learn best from teaching others. We will use all these forms of communication in this class, but we will emphasize discussions, participating and teaching others through your responses to questions in class.



**Written Assignments:** You will do 4 written assignments each worth 100 points. An assignment will be due at the end of each section of the course: 1) Challenges (February 3), 2) Opportunities (March 3), 3) Living in an Evolutionary Spirit (March 31), and 4) Transcending Boundaries (April 23). Written assignments must be typed double-spaced, and they can be only 5 pages in length.

For each assignment, you must: 1) summarize highlights from that section, including readings, videos, guest lectures and discussions, and 2) discuss the implications for your personal life and for managing landscapes. We will not grade late assignments.

**Class Dialog and Discussion:** We will participate in group dialogue. You will be expected to be prepared to give thoughtful comments and to help lead class dialog during class. I will ask you at random 3 to 4 times during the semester and ask you to help lead discussion on the materials for that day. Each time you participate will be worth 50 points for a total of 150 to 200 points.

**Final:** You will be expected to recap the highlights of the course. I will provide more detailed instructions later in the course. The final will be worth 200 points.

**Accommodations for Disabilities:** Students with physical, sensory, emotional or medical impairments may be eligible for reasonable accommodations in accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973. All accommodations are coordinated through the Disabilities Resource Center (DRC) in Room 101 of the University Inn, 97-2444 voice, 797-0740 TTY, or toll free at 1-800-259-2966. Please contact the DRC as early in the semester as possible.

**Academic Integrity:** Each student has the right and duty to pursue his or her academic experience free of dishonesty. The Honor System is designed to establish the higher level of conduct expected and required of all USU students. Infractions (cheating, falsification, and plagiarism) and their associated penalties are described in the USU Academic Policies and Procedures Manual ([www.usu.edu/policies](http://www.usu.edu/policies)). Click on "C" for cheating, "F" for falsification and "P" for plagiarism. If you have questions about what may be plagiarism, please discuss it with me.

**Course Fees:** Fees are used for travel for guest lectures by people from off campus and for labs.

## WILD 4900, Spring 2009

### I. The Challenges

A1. Are we “Sleepwalking into the future?” (January 8)

A2. Is there anything we can do about that -- now, in 50 years, in 100 years?

**Reading: Kunstler--The Long Emergency**

B1. What does it mean to be locally adapted to a landscape? – Food (January 13)

**Readings: 1) Pollan--The Food Issue; 2) Pollan--Power Steer**

B2. What does it mean to be locally adapted to a landscape? – Natural Resources (January 15)

**Readings: 1) Holechek - Ranching and Rangelands; 2) Provenza--Local Adaptation**

**Movie: The Power of Community**

C1. The Business of Paradigms (January 20)

1) What are paradigms? What are the origins of paradigms?

2) What are the strengths and weaknesses of paradigms?

3) What causes people to change their paradigms?

**Movie: The Business of Paradigms**

**Movie: Ken Bain** (January 22)

**Guest Lecture: Agee Smith** (January 27)

C2. Changing Paradigms (January 29)

1) What is the value of constantly evaluating one’s paradigms?

2) What are the most effective ways to get people to examine their paradigms?

3) What are the Five Disciplines and how are they related to paradigms?

**Reading: Senge--The Fifth Discipline**

**Novel Food Day**

**Written Assignment 1 due February 3**

## II. The Opportunities

### D1. Uncertainty: Change plus Chance equals Opportunity (February 3)

- 1) What causes change and uncertainty?
- 2) How are change and chance related?
- 3) What is the role of chance in life? What are examples?
- 4) What is the value of uncertainty?
- 5) How does evolution deal with uncertainty?
- 6) What is free-will? What evidence is there it exists?
- 7) How does one best manage in an uncertain world?

**Readings:** Bernstein--Risk at the Roots

**Movie:** Ghost in Your Genes (February 5)

### D2. Impact of Science on Myth and Vice-Versa (February 10)

- 1) What is reductionist science? What are its strengths and weaknesses?
- 2) What is mythology? What are its strengths and weaknesses?
- 3) Are science and myth interrelated and if so how? Why are they seemingly at odds?
- 4) What are the implications of concretizing any belief?

**Reading:** Joseph Campbell--Impact of Science on Myth

### D3. What is adaptive resource management? (February 12)

**Readings:** Hollick--Self-Organizing Systems and Management

**Lecture:** Michael Crichton--<http://www.michaelcrichton.net/speech-complexity.html>

No Class, President's Day (February 17)

**Guest Lecture:** Rick Danvir (February 19)

### D4. Why Environmental Nightmares Recur

**Reading:** Yaffee--Why Environmental Policy Nightmares Recur

**Movie:** The Greatest Good (February 24)

**Guest Lectures:** Lisa VanAmburg, Jessica Pettee (February 26)

**Written Assignment 2 due March 3**

### III. Living in an Evolutionary Spirit

#### E1. Origins of Suffering: How Not to Live in an Evolutionary Spirit (March 3 and 5)

- 1) Pain Transforms
- 2) Discontent Liberates
- 3) Mental Constructs Imprison
- 4) Lack of Understanding
- 5) The Only Constant

**Reading: Doidge--The Brain that Changes Itself**

**Movie: The Great Global Warming Swindle**

No Class, Spring Break (March 10 and 12)

#### E2. Path to Enlightenment: How to Live in an Evolutionary Spirit (March 17, 19)

- 1) The Beauty of Impermanence
- 2) The Perfection of Freedom
- 3) The Rightness of Intent
- 4) The Creativity of Individuality
- 5) The Harmony of Causality
- 6) The Triumph of Unity
- 7) The Serenity of Being
- 8) Enlightenment

**Readings: Rinpoche--Emptiness: The Reality Beyond Reality; The Relativity of Perception**

**Movie: Bhutan--The Last Shangri-La** (March 24)

**Guest Lecture: Bob Budd** (March 26)

**The Commons Game** (March 31)

**Written Assignment 3 due March 31**

## IV. Transcending Boundaries

### F1. Team Building and Learning Disabilities (April 2)

- 1) What is a team? What makes teams work well? What causes teams to fall apart?
- 2) What are the seven learning disabilities of people and teams?
- 3) What are the implications for managing natural resources?
- 4) Coordinated Resource Management (Video: Bob Budd--CRM)

**Readings: Rinpoche – 1) The Gift of Clarity; 2) Compassion: Survival of the Kindest; 3) Why are We Unhappy?**

**Guest Lecture: Terry Messmer** (April 7)

**Guest Lecture: John and Jocelyn Haskell** (April 9)

**Movie: Bruce Vincent** (April 14)

### F2. In-Class Presentations (April 16, 21)

**Written Assignment 4 due April 23**

## V. Wrap-up

### G1. Parting Thoughts (April 23)

### G2. Suggestions for Improving the Class (April 23)

## **WILD 4900**

### **Readings 2009**

#### **The Challenges**

Kunstler, J.H. 2005. Sleepwalking into the future, pages 1-21 in *The Long Emergency: Surviving the End of Oil, Climate Change, and Other Converging Catastrophes of the Twenty-First Century*. Grove Press, New York, NY.

Holechek, J.L. 2007. Western ranching, trade policies, and peak oil. *Rangelands* 28-32.

Pollan, M. 2001. Power Steer. *New York Times*, March 31.

Pollan, M. 2008. The Food Issue - Farmer in Chief. *New York Times*, October 12, 2008

Provenza, F.D. 2007. What does it mean to be locally adapted and who cares anyway? *J. Anim. Sci.* 86:E271-E284.

Senge, P.M. 1994. Give me a lever long enough...Pages 3-16 in *The Fifth Discipline: The Art and Practice of the Learning Organization*. Doubleday, NY.

#### **The Opportunities**

Bernstein, P. 1998. Risk at the roots. *Market Leader* 2:40-43. NTC Publications Ltd.

Campbell, J. 1972. The impact of science on myth. Pages 1-18 in *Myths to Live By*. Bantam Books, NY.

Crichton, M. 2005. Complexity theory and environmental management.  
<http://www.michaelcrichton.net/speech-complexity.html>

Hollick, M. 1993. Self-organizing systems and environmental management. *Environmental Management* 17:621-628.

Yaffee, S.L. 1997. Why environmental policy nightmares recur. *Conservation Biology* 11:328-337.

### **Living in an Evolutionary Spirit**

Doidge, N. 2007. Appendix 1: The Culturally Modified Brain, pages 287-311 in *The Brain that Changes Itself*. Penguin Books. New York, NY.

Rinpoche, Y.M. 2007. Emptiness: The reality beyond reality. Pages 59-75 in *The Joy of Living: Unlocking the Secret & Science of Happiness*. Harmony Books, New York, NY.

Rinpoche, Y.M. 2007. The relativity of perception. Pages 76-93 in *The Joy of Living: Unlocking the Secret & Science of Happiness*. Harmony Books, New York, NY.

### **Transcending Boundaries**

Rinpoche, Y.M. 2007. The gift of clarity, pages 94-103 in *The Joy of Living: Unlocking the Secret & Science of Happiness*. Harmony Books, New York, NY.

Rinpoche, Y.M. 2007. Compassion: Survival of the kindest, pages 104-109 in *The Joy of Living: Unlocking the Secret & Science of Happiness*. Harmony Books, New York, NY.

Rinpoche, Y.M. 2007. Why are we unhappy? pages 110-125 in *The Joy of Living: Unlocking the Secret & Science of Happiness*. Harmony Books, New York, NY.