

WILD 7030
Plant-Herbivore Interactions
Fred Provenza
Spring 2009

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

Lecture: ENGR 206, 9:00 to 10:15 T,H

Lectures and Reading: Available on-line on Blackboard Vista.

Through lectures and dialog we will explore functional relationships among soils, plants, herbivores, and people as they pertain to managing landscapes. We will discuss behavioral principles and processes, explore avenues for research, and talk about implications for agricultural production involving feedlots, pastures, and rangelands; enhancing and maintaining biodiversity through grazing; ecosystem restoration involving grazing, invasive species, and riparian areas; enhancing wildlife values by mitigating human-wildlife conflicts; and conservation biology including re-introducing endangered species.

Throughout the course, we emphasize principles of plant and animal behavior. Once understood, behavioral principles can be translated into practices that provide an array of solutions to challenges people face in managing to improve the integrity of the land and to make a living from the land. Unlike the infrastructure of a ranch such as corrals, fences, and water development, behavioral solutions cost little to implement, they are not fossil-fuel intensive, and they are easily transferred from one situation to the next. In the case of grazing, for instance, behavioral solutions are increasingly attractive given growing economic and environmental concerns with the use of fire, herbicides, and mechanical means for rejuvenating landscapes.

Unfortunately, scientists and managers often ignore the power of behavior to transform systems, despite compelling evidence. We know the environment continually interacting with the genome during the growth and development of an organism creates behavioral responses. Though experiences during development in utero and early in life are especially critical, genome-environment interactions continue throughout life and they constitute what it means for all organisms to be locally adapted to landscapes. Thus, the issue isn't if creatures are adapting to ongoing changes in biophysical environments, they do so every day of their lives. The only question is whether or not people want to be a part of that process.

For those willing to understand how environments interact with the genome to create behaviors – ours and other creatures, the potential is virtually unlimited. The challenge is to understand and apply the principles to all facets of one's life. In that sense, rather than developing and transferring “technology” packages, we will discuss how to change, fundamentally, the way people understand and use behavior to manage ecosystems. We want people to realize the power of behavior to transform systems ecologically, economically, and socially.

Week/Dates**Subject Matter**

January 6	Course Overview
January 8	Science, Myth, Management
January 13, 15	Science, Myth, Management
January 20, 22	Science, Myth, Management
January 27, 29	Dynamics of Plant Behavior: Evolution
February 3, 5	Dynamics of Plant Behavior: Tolerance
February 10, 12	Dynamics of Plant Behavior: Tolerance/Avoidance
February 17	No Class, President's Day
February 19	Dynamics of Plant Behavior: Avoidance
February 24, 26	Dynamics of Plant Behavior: Avoidance
	<i>Mid-Term Exam: Due March 5 (open book, take home)</i>
March 3	Challenges Herbivores Face in Foraging
March 5	Models of Diet and Habitat Selection
March 10, 12	No Class - Spring Break
March 17	Models of Diet and Habitat Selection
March 19	Principles of Animal Behavior
March 24, 26	More than a Matter of Taste
April 2	Transgenerational Linkages
April 7, 9	Transgenerational Linkages
April 14, 16	The Spice of Life
April 21	The Spice of Life
April 23	Transcending Boundaries
	<i>Final Exam: Due April 28 (open book, take home)</i>