THEORETICAL FOUNDATIONS IN HUMAN DIMENSIONS OF ECOSYSTEM SCIENCE & MANAGEMENT
EnvS 6000, Fall 2004

Meetings: M, W 2:30-3:45; BNR 314

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Office Hours: T, Th 2:00-4:00

Grad. Asst.:
Contact:
Office Hours:

Summary:
This course provides an overview of interdisciplinary theories and frameworks for studying how human societies affect, and are affected by, ecosystem processes at local, regional, and global scales. The primary focus is on 1) large scale (watershed, ecosystem, bioregional) planning and management models that seek to integrate social and biophysical factors; and 2) theoretical perspectives that help us understand human interaction with the environment, and how to incorporate human dimensions in large scale, interdisciplinary models. We will discuss alternative models and goals of natural resource and environmental (NR/E) use and management, philosophical foundations of sustainability and ecosystem management, differences between science and management, and theoretical perspectives that seek to integrate human and biophysical components of ecosystems. We will also review and evaluate case studies that seek to integrate biophysical and human dimensions in ecosystem level planning, policy, and management. The integrative models will focus primarily on planning theory, systems theory, environmental sociology, human ecology, and ecological economics.

The primary goal of the class is to learn about the theoretical perspectives underlying the goals and assumptions of sustainability and ecosystem science and management, and develop an understanding of general principles that will determine the quality of ecosystem management-based studies and projects.

Part I . ***Parables and human nature: Facts and myths about human behavior and perception***
Why do people do what they do? And why does it appear we can not (or will not?) moderate our behavior to improve humanBenvironment sustainability? We will discuss the underlying causes of human impacts on the environment, and the perceptual and behavioral characteristics that limit our adaptive ability. We will also begin to identify some generalizable principles and Asuccess factors@ for merging environmental and community sustainability.

Part II. ***Ecosystem science and management: Past paradigms and historical foundations***
Here we will discuss ecosystem science, sustainability, and alternative philosophies of environmental management. We will also discuss theories of science and post modern criticisms of science and the environmental management models of the last 100 years. Again, we will identify generalizable principles and Asuccess factors@ for merging environmental and community sustainability.

Part III. ***Philosophical foundations of Ecosystem Management***
We will review and discuss the new and somewhat controversial initiative being adopted by land management agencies in the U.S. called AEcosystem Management.@ We will discuss how it relates to theories of democracy, how it differs from past NR/E models, and controversies regarding the character and value of Ecosystem Management. Here, the theories we discuss will be related to the four Abasic themes@ that characterize Ecosystem Management: 1) socially defined goals and objectives; 2) holistic,

integrated science; 3) adaptable institutions; and 4) collaborative decision making (Cortner & Moote 1999:40). Again, we will identify generalizable principles and Asuccess factors@ for merging environmental and community sustainability.

Part IV. ***Theories of integration and case study applications***
Most of the course will be spent reviewing theories, planning models, and case examples from various disciplines that integrate human and natural systems for the purpose of environmental sustainability. Two types of theories will be discussed: 1) Traditional social disciplines that have integrated physical environmental factors (e.g., environmental sociology, ecological economics), and 2) applied planning frameworks that seek to integrate social, physical, and economic factors (e.g., systems analysis, planning theory). For each topic, we will discuss how the new Aintegrated@ paradigm differs from traditional theory in that discipline, how it integrates social and natural elements or systems, and key findings or principles that influence our understanding and use of integrated models. We will review and evaluate the case studies in each discipline, based on the needs emerging from the generalizable principles and Asuccess factors@ identified in Parts I, II, and III of the course.

Student Evaluation:
The course will be a discussion/seminar format, and students are expected to be active participants in class discussion. Most assignments will be written papers and presentations.

Parts I and II. ASo what@ paperB6 to 8 page paper and presentation addressing generalizable principles and Asuccess factors@ for merging environmental and community sustainability in ecosystem science and management (30%)

Part III. Paper (10 page maximum) reviewing an ecosystem management project, case study, or controversy (20%).

Part IV. 10- to 15-page case study review, evaluation, and recommendations. Identify and describe a case study using the theories and generalizable principles all parts of the course. Last year students wrote on the Kibale National Park Coffee Project in Kenya, and submitted papers to Rob Lilieholm for use in project evaluation (40%).

Participation. (10%).

Textbooks:
Cortner, Hanna J. and Margaret A. Moote. 1999. *The Politics of Ecosystem Management.* Washington, DC: Island Press. (USU bookstore)

Other Readings:
In addition to readings from the textbooks, there will also be readings handed out in class or on electronic course reserve in the Sci Tech Library. Go to the USU homepage and click on ALibraries,@ ACourse Reserves,@ ACourse Reserve Materials,@ ABlahna, Dale,@ AENVS 6000,@ (pw: BLA6000), and then the title of the specific reading or group of readings you want. Readings will be assigned for each week of class, and your participation grade will be based on class participation and my estimate of the extent to which you completed the class readings and *use* them in assignments. For most classes I will hand out a worksheet with some class discussion questions; I will not collect or grade the worksheets but they will help you to prepare for class discussion and focus on important questions from the class readings.

Course outline:

Part I . ***Parables and human nature: Facts and myths about human behavior and perception***

Parables of human perception (knowledge/certainty/wickedness, scale, integration, floating baseline)
Past as prologue: The nature of human impacts

Part II. ***Ecosystem science and management: Past paradigms and historical foundations***

Ecosystem science: An overview
Science, management, and the limits of knowledge
Historical foundations and models of human-nature interactions, use, and management
Social construction of nature and natural resource management
Philosophical foundations of sustainability (community and ecological)

Part III. ***Philosophical foundations of Ecosystem Management***

What is Ecosystem Management? A shifting paradigm?
Philosophical foundation (theories of democracy, decision making, etc.)
Conflicts & controversies
Basic themes:
- Socially defined goals and objectives
- AHolistic@ science
- Adaptable institutions
- Collaborative decision-making

Part IV. ***Theories of integration and case study applications***

Planning theories
Evolutionary/ecological anthropology
Environmental sociology/human ecology
Environmental psychology
Ecological economics
Political ecology
Systems analysis and modeling /Panarchy

Case study review and evaluation, group presentations of conclusions. Evaluation of different approaches and the use of Asuccess factors@ for merging environmental and community sustainability in ecosystem based projects.

DISABILITY RESOURCE CENTER:

The university is required by law to help disabled students participate fully in all programs, activities, and services. If you have a disability documented by the Disability Resource Center that requires note-takers, interpreters for the deaf, extended testing time, etc., let me know as soon as possible. The Disability Resource Center may also help provide course material in alternative formats like large print, Braille, and diskette.

Course Outline and Readings (under development):

Part I . ***Parables and human nature: Facts and myths about human behavior and perception***

Week 1: Parables of human nature

Rettie, James C. 1948.But a watch in the night: A scientific fable. (Adapted from a USDA Forest Service publication ATo Hold this Soil.@)

Pauly, Daniel. 1995. Anecdotes and the shifting baseline syndrome of fisheries. Trends in Ecology and Evolution 10: 430.

Odum, William E. 1982. Environmental degradation and the tyranny of small decisions. BioScience 32(9): 728-729.

Allen, Gerald M, and Ernest M. Gould, Jr. 1986.Complexity, wickedness, and public forests. Journal of Forestry (April): 20-23.

Saxe, John Godfrey. Blind Men and an Elephant.(Poem)

Brosius, J. Peter, *et al*. 2003. Conservation and the social sciences. Conservation Biology 17(3): 649-650.

Wong, F.F. 1991. Prologue: An allegory or a Fairy Tale? (From Diversity and community: Right objectives and wrong assumptions, Change: The Magazine of Higher Learning (July/August)).

Week 2: Past as Prologue: The nature of human impacts

C.L. Redman. 1999. Past as prologue. Ch. 8 in *Human Impact on Ancient Environments.* Tucson, AZ: University of Arizona Press.

Part II. ***Ecosystem science and management: Past paradigms and historical models***

Week 3: Ecosystem science: An overview (Layne Coppock)

Readings TBA

Harper, Charles L. 2001. Environmental problems and ecosystems. Ch. 1 in Environment and Society: Human Perspectives on Environmental Issues. Upper Saddle River, NJ: Prentice Hall.

Week 4:
Science, management, and the limits of knowledge

Bronowski, J. 1973. Knowledge or certainty. Ch. 11 in *The Ascent of Man.* Boston: Little, Brown, and Company.

Ludwig, D., R. Hilborn, C. Walters. 1993. Uncertainty, resource exploitation, and conservation: Lessons from history. Ecological Applications, 3(4): 547-549.

Lewis, M. 1996. Radical environmental philosophy and the assault on reason. Pp. 209-230 in Goss, P.R., N.Levitt, and M. Lewis. *The Flight from Science and Reason.* New York: New York Academy of Sciences.

(See Klamath River Basin case study readings--Cont. Next page)

Klamath River Basin Case Study (Oregon):

Clarren, Rebbecca. 2001. No refuge in the Klamath Basin. *High Country News* 33(15).

Clarren, Rebbecca. 2002. Klamath Basin II: The saga continues. *The High Country News* 34(4).

Vandemoer, Katherine. 2002. The message of 30,000 dead Salmon. *The High Country News* Oct. 28.
Murphy, Dean E. 2003. California report supports critics of water diversion. *New York Times*, Jan. 7.

Historical foundations and models of humanBnature interactions, use, and management
Social construction of nature
Social construction of natural resource management

Greider, T. and L. Garkovich. 1994. Landscapes: The social construction of nature and the environment. Rural Sociology 59(1): 1-24

Fine, G.A. 1997. Naturework and the taming of the wild: The problem of Aoverpick@ in the culture of mushroomers. Social Problems 44(1): 68-88.

Culhane, P.J. 1981. The public lands and the clash of conflicting interests. Ch. 1 *in* Public Lands Politics. Baltimore, MD: The Johns Hopkins University Press.

Week 5:

Webster, H.H. and D.E. Chappelle. 1997. The curious state of forestry in the United States. Renewable Resources Journal 15(Spring): 6-8.

Behan, R.W. 1997. The obsolete paradigm of professional forestry. Renewable Resources Journal 15(Spr.): 14-19.

Nelson, R.H. 1999. The religion of forestry: Scientific management. Journal of Forestry 97(11): 4-8.

Philosophical foundations of sustainability (community and ecological)

Struhsaker, T.T. 1998. A biologists perspective on the role of sustainable harvest in conservation. Conservation Biology, 12(4): 930-932.

Callicott, J.B. 1991. The wilderness idea revisited: The sustainable development alternative. The Environmental Professional 13: 235-247.

Gale, R.P. and S.M. Cordray. 1991. What should forests sustain? *Journal of Forestry* 89(May):31-36.

Week 6: *ASo what@ group paper presentations*

Part III. ***Philosophical foundations of Ecosystem Management***

Week 7: What is Ecosystem Management? A shifting paradigm?
Philosophical foundation (theories of democracy, decision making, etc.)
Conflicts & controversies
Basic themes

Text: Cortner & Moote, Ch. 1, 2, and 3

Theme 1. Socially defined goals and objectives

Grumbine, R.E. 1994. What is ecosystem management? Conservation Biology 8(1): 27-38.

Jones, J.R., R. Martin, and E.T. Bartlett. 1995. Ecosystem management: The U.S. Forest Service=s response to social conflict. Society & Natural Resources 8: 161-168.

Gilmore, D.W. 1997. Ecosystem managementBA needs driven, resource-use philosophy. The Forestry Chronicle 73(5): 560-564.

Endter-Wada, J., D.Blahna, R.Krannich, M.Brunson. 1998. Framework for understanding social science contributions to ecosystem management. Ecological Applications 8(3): 891-904.

Stanley, Thomas R. 1995. Ecosystem management and the arrogance of humanism. *Conservation Biology* 9(2): 255-262.

Week 8 & 9:

Text: Cortner & Moote, Ch. 4

Blahna, D.J., D.K. Reiter. 2001. Whitewater boaters in Utah: Implications for wild river planning. *International Journal of Wilderness* 7(1): 39-43.**

Theme 2: AHolistic@ science
Theme 4: Adaptable institutions

Text: Cortner & Moote, Ch.5 & 7

Wagner, F.H. 1999. Values, science, and policy: How best to serve the national parks? George Wright Forum 16(3): 52-62.

Wagner F.H. 2001. Freeing agency research from policy pressures: A need and an approach. BioScience 51(6): 445-450.

Kay, James, J et al. 1999. An ecosystem approach for sustainability: Addressing the challenge of complexity. Futures 31: 721-742.

Theme 3: Collaborative decision-making

Text: Cortner & Moote, Ch. 6 & 8

Moote, M.A., M. McClaran.1997. Viewpoint: Implications of participatory democracy for public land planning. Journal of Range Management 50: 473-481.

Kenney, D.S. 2000. Arguing about consensus: Examining the case against western wartershed initiatives and other collaborative groups active in natural resource management. *Natural Resources Law Center Newsletter*, January.

Burroughs, R. 1999. When stakeholders choose: Process, knowledge, and motivation in water quality decisions. *Society and Natural Resources* 12(8): 797-809.

Week 10:

Part IV. ***Theories of integration and case study applications***

Socioecology, human ecology, environmental sociology

Layton, R. 1997. Socioecology. In *An Introduction to Theory in Anthropology*. Cambridge Univ. Press.

Harper, C. L. 2001. Human systems, environment, and social science. Ch. 2 in Environment and Society: Human Perspectives on Environmental Issues. Upper Saddle River, NJ: Prentice Hall.

C.L. Redman. 1999. Past as prologue. Ch. 8 in *Human Impact on Ancient Environments.* Tucson, AZ: University of Arizona Press. (Review)

Tear, T.H., and D. Forester. 1992. Role of social theory in reintroduction planning: a case study of the Arabian oryx in Oman. Society and Natural Resources 5:359-374.

Schelhas, J., R.E. Sherman, T.J. Fahey, and J.P. Lassoie. 2002. Linking community and national park development: A case from the Dominican Republic. Natural Resources Forum 26: 140-149.

Planning theories and institutional analysis

Campbell, Heather and Robert Marshall. 1991. Ethical frameworks and planning theory. *Urban and Regional Planning* 23(3): 464-478.

National Research Council, Committee on Human Dimensions of Global Change. 2002. The Drama of the Commons. Washington, DC: National Academy Press. (Selected chapters)

Margerum, R.D. 1999. Integrated environmental management: The foundations for successful practice. Environmental Management 24(2): 151-166.

Systems analysis/Panarchy

Hoos, Ida. 1972. Systems Analysis in Public Policy: A Critique. Los Angeles: University of California Press. (Selected chapters)

Gunderson and Holling (eds.) 2002. Panarchy: Understanding Transformations in Human and Natural Systems. Washington DC: Island Press.

Berkes, Fikert and Carl Folke (eds.). 1998. Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience. Cambridge: Cambridge University Press. (Selected chapters)

Abel, T. 1999. Current approaches to modeling ecosystems with humans. (Source unknown)

Walker, B. et al. 2002. Resilience management in social-ecological systems: A working hypothesis for a participatory approach. Conservation Ecology 6(1):14 [online] www.consecol.org/vol6/iss1/art14.

Ecological economics

Costanza, Robert, *et al.* 1997. The value of the world=s ecosystem services and natural capital. *Nature.* 387 (May): 253-260.

Martinez-Alier, J. 2003. Environmentalism of the poor as environmentalism of livelihood. Human Ecology Review (20): 28-31.

Kibale National Park Wild Coffee Project:

R.J. Lilieholm, and W.P. Weatherly 2004.The Wild Coffee Project: Using Global Markets to Fund Conservation and Development in East Africa (Draft paper)

Selected readings from: National Research Council (Ibid.), Gunderson and Holling (Ibid), Fikert and Folke (Ibid.).

Planning/Ecosystem Analysis Case studies

Roe, E. 1996. Why ecosystem management can=t work without social science: An example from the California northern spotted owl controversy. Environmental Management 20(5): 667-674.

Kershner, Jeffrey, L. 1997. Setting riparian/aquatic restoration objectives within a watershed context. Restoration Ecology 5(4S): 15-24.

Schmidt, John C. et al. 1998. Science and values in river restoration in the Grand Canyon. Bioscience 48(9): 735-747.

Harwell et al. 1996. Ecosystem management to achieve ecological sustainability: The case of South Florida. Environmental Management 20(4): 497-521.