Environmental Systems 241: Natural Resource Management (Fall 2017)

Meeting time: Tuesdays 1:30-4:20
Location: COB2, Room 265
Instructor: Prof. Jeffrey Jenkins
Contact: jeff.jenkins@ucmerced.edu
Office hours: By appt., SSM 202B

Course Description

This course examines environmental planning and natural resource management from multiple perspectives. We will focus on the historical, geographical, and political-legal factors that have shaped the policy and governance of public and privately held lands in the American West. The course will utilize case studies from the California's Sierra Nevada and Central Valley, however we will also scale up and out to understand how geopolitical forces, market interests, technological innovations, and competing knowledge claims have transformed rural and regional landscapes. Through discussion, presentations, and textual analysis we will cover a wide range of frameworks and topics throughout the semester, some of which include: complexity of socio-ecological systems, political ecology and power, biocentrism and anthropocentrism, the "trouble" with wilderness, recreation and visitor use management, exurbia and amenity migrants, conservation ecology, the commons and contested landscapes, climate change and the media, adaptive management, conservation easements, extractive industries, federal lands agencies and competing mandates, and ecosystem services and human well-being.

Course Goals and Learning Outcomes

The goals and learning outcomes of this course are tied to the program learning outcomes of the Environmental Systems graduate program at UC Merced (es.ucemerced.edu).

A. Course Goals

- Describe the advantages and disadvantages of different types of resource governance.
- Understand the different policy mandates and economic interests shaping decision-making between lands management agencies, civil society, and the private sectors.
- Conceptualize complex environmental problems as coupled socio-ecological systems with adaptation, intervention, non-linear states, and uncertain outcomes.
- Communicate conservation and development alternatives in environmental planning to a diverse set of stakeholders.
- Explain present day land use conflict as historically contingent and shaped by competing knowledge and values where multiple uses vie for control and access to resources.
- Apply natural resource management approaches to student research projects in the interdisciplinary environmental sciences to better inform policy and decision-making.

B. Course Learning Outcomes

The first course learning outcome is to enhance student's core knowledge about natural resources and lands management issues as complex socio-ecological systems where human and

environmental needs are connected. Students will learn about governance, collaboration, and conflict between stakeholders from lands management agencies, non-governmental organizations, and market-based interests. The second learning outcome is to enhance student's communication skills for conveying planning, science, and public opinion to decision-makers to inform management outcomes. Students will develop and improve critical thinking and writing skills through in-class discussions and critical review of academic papers. The third learning outcome is to instill an ethical, community-based, and life-long framework for students to understand and address natural resource management challenges. Students will accomplish this through a better understanding of how policies, values, and history shape different environmental planning and management outcomes.

Grading and Class Requirements

Your final grade will be based on the following percentage point break down. Class participation includes attendance at each meeting and a willingness to participate in discussion or ask questions (10%). It's expected you will lead two weekly reading discussions (20%). Given the format of the course it's important that you attend every class or if you are unable to make a meeting then coordinate with other students on what material was covered. Midway through the course you'll be required to give a presentation to the class of approximately 15 minutes on your natural resource management paper topic followed by time for questions (20%). The final research paper will consist of an in-depth case study relevant to natural resource management, environmental planning, conservation science, or regulatory politics (30%). The final paper should be approximately 20 pages (double-spaced) with works cited, and you will be expected to apply theoretical frameworks covered in the course to your given topic. You'll also be asked to submit an initial abstract (300-word limit), outline, and initial set of references on your chosen topic by week 5 of the course (10%) and first draft of the paper with topic background and literature review by week 10 (10%).

Course Policies

- *Classroom interaction.* I encourage personal views and critical inquiry based on the material and topics at hand. Equally, I expect that the viewpoints of others will be respected. Consider this course to be valuable practice to engage with your peers through professional communication and scholarly discourse.
- *Special accommodations.* Students who need special accommodations are required to submit the appropriate form to me in person, preferably within the first two to three weeks of the quarter and outside of class. If you will be requesting academic accommodations, you must first contact the Disability Services (http://disabilityservices.ucmerced.edu/).
- *Academic integrity.* The University has established codes concerning proper academic conduct and the consequences resulting from improper behavior. Please be aware of these policies (http://studentlife.ucmerced.edu/content/uc-conduct-standards).
- *Life as a UC-Merced Student.* Your course facilitators are aware of the many pressures we all face. There are many campus services specifically suited to help you throughout your university career, please take advantage of your resources, including: Academic Advising (http://advising.ucmerced.edu/), Health Services (http://health.ucmerced.edu/), and Counseling and Psychological Services (http://counseling.ucmerced.edu/).

Class Schedule and Readings

*All topics/dates/assignments are subject to revision

Theme 1: The commons, knowledge/power, and contested landscapes

Week 1: Defining the commons

Foundational:

- Dietz, T., Ostrom, E., & Stern, P. C. (2003). The struggle to govern the commons. *Science*, 302(5652), 1907-1912.
- Hardin, G. (2009). The Tragedy of the Commons∗. *Journal of Natural Resources Policy Research*, 1(3), 243-253.

Applied:

- Geores, M. E. (1998). The historic role of the forest community in sustaining the Black Hills National Forest as a complex common property multiple use resource. *Mountain Research and Development*, 83-94.
- Rudestam, K., Langridge, R., & Brown, A. (2015). "The commons" as a dynamic variable in understanding strategic alliances of scale: A groundwater case study in Pajaro Valley, California. *Environmental Science & Policy*, 52, 33-40.

Week 2: Knowledge, power, and contested landscapes (part I)

Foundational:

- McCarthy, J. (2002). First World political ecology: lessons from the Wise Use movement. *Environment and planning A,* 34(7), 1281-1302.
- Schroeder, R. A., Martin, K. S., & Albert, K. E. (2006). Political ecology in North America: discovering the Third World within?. *Geoforum*, 37(2), 163-168.

Applied:

- Leslie-Bole, H., & Perramond, E. P. (2017). Oyster feuds: conflicting discourses and outcomes in Point Reyes, California. *Journal of Political Ecology*, 24, 144-166.
- Rikoon, J. S. (2006). Wild horses and the political ecology of nature restoration in the Missouri Ozarks. *Geoforum*, 37(2), 200-211.
- Robbins, P. (2006). The politics of barstool biology: environmental knowledge and power in greater Northern Yellowstone. *Geoforum*, 37(2), 185-199.

Week 3: Knowledge, power, and contested landscapes (part II)

Foundational:

- Graham, N. (2010). Lawscape: property, environment, law. Routledge.

Applied:

- Benson, M. H. (2012). Mining sacred space: law's enactment of competing ontologies in the American West. *Environment and Planning A*, 44(6), 1443-1458.

- Mathews, A. S. (2005). Power/knowledge, power/ignorance: forest fires and the state in Mexico. *Human Ecology*, 33(6), 795-820.
- Rose, J., Brownlee, M. T., & Bricker, K. S. (2016). Managers' perceptions of illegal marijuana cultivation on US federal lands. *Society & natural resources*, 29(2), 185-202.

Week 4: The New West, exurbia, and amenity migrants

Foundational:

- Duane, T. P. (1999). *Shaping the Sierra: Nature, culture, and conflict in the changing West*. University of California Press. (excerpts)

Applied:

- Chase, J. (2015). Bending the rules in the foothills—County general planning in exurban northern California. *Society & Natural Resources*, 28(8), 857-872.
- Robbins, P., Meehan, K., Gosnell, H., & Gilbertz, S. J. (2009). Writing the new west: a critical review. *Rural Sociology*, 74(3), 356-382.
- Walker, P., & Fortmann, L. (2003). Whose landscape? A political ecology of the 'exurban' Sierra. *Cultural geographies*, 10(4), 469-491.

Week 5: Climate change, the media, and popular culture

Foundational:

- Dunlap, R. E., & McCright, A. M. (2011). Organized climate change denial. *The Oxford handbook of climate change and society*, 144-160.

Applied:

- Boykoff, M., & Olson, S. (2013). 'Wise contrarians': a keystone species in contemporary climate science, politics and policy. *Celebrity studies*, 4(3), 276-291.
- Prudham, S. (2009). Pimping climate change: Richard Branson, global warming, and the performance of green capitalism. *Environment and Planning A,* 41(7), 1594-1613.
- Zaleha, B. D., & Szasz, A. (2015). Why conservative Christians don't believe in climate change. *Bulletin of the Atomic Scientists*, 71(5), 19-30.

SUBMIT draft abstract, outline and initial references for term paper

Theme 2: Public lands and protected areas management

Week 6: The Anthropocene, wilderness, and environmental change

Foundational:

- Smith, B. D., & Zeder, M. A. (2013). The onset of the Anthropocene. *Anthropocene*, 4, 8-13.
- Alagona, P. S., Sandlos, J., & Wiersma, Y. F. (2012). Past imperfect: using historical ecology and baseline data for conservation and restoration projects in North America. *Environmental Philosophy*, 9(1), 49-70.

Applied:

- Cronon, W. (1996). The trouble with wilderness: or, getting back to the wrong nature. *Environmental History*, 1(1), 7-28.
- Hobbs, R. J., Cole, D. N., Yung, L., Zavaleta, E. S., Aplet, G. H., Chapin, F. S., ... & Graber, D. M. (2010). Guiding concepts for park and wilderness stewardship in an era of global environmental change. *Frontiers in Ecology and the Environment*, 8(9), 483-490.
- Vayda, A. P., & Walters, B. B. (1999). Against political ecology. *Human ecology,* 27(1), 167-179.

Week 7: Conservation, enclosure, and the ensuing debate

Foundational:

- Chapin, M. A. (2004). *A challenge to conservationists.* Worldwatch Institute.
- Neumann, R. P. (1996). Dukes, earls, and ersatz Edens: aristocratic nature preservationists in colonial Africa. *Environment and Planning D: Society and Space*, 14(1), 79-98.

Applied:

- Fletcher, R. (2010). Neoliberal environmentality: towards a poststructuralist political ecology of the conservation debate. *Conservation and society,* 8(3), 171.
- Kareiva & Marvier. (2012). What is conservation science? *BioScience*, 62(11), 962-969.
- Miller, B., Soulé, M. E., & Terborgh, J. (2014). 'New conservation' or surrender to development? *Animal Conservation*, 17(6), 509-515.

Week 8: Conservation easements and the role of private lands

Foundational:

- Kay, K. (2016). Breaking the bundle of rights: Conservation easements and the legal geographies of individuating nature. *Environment and Planning A*, 48(3), 504-522.

Applied:

- Cross, J. E., Keske, C. M., Lacy, M. G., Hoag, D. L., & Bastian, C. T. (2011). Adoption of conservation easements among agricultural landowners in Colorado and Wyoming: The role of economic dependence and sense of place. *Landscape and Urban Planning*, 101(1), 75-83.
- Cameron, D. R., Marty, J., & Holland, R. F. (2014). Whither the rangeland?: Protection and conversion in California's rangeland ecosystems. *PloS one*, 9(8), e103468.
- Morris, A. W. 2008. Easing conservation? Conservation easements, public accountability and neoliberalism. *Geoforum* 39(3):1215-1227

Week 9: Recreation and visitor use management

Foundational:

- Abbey, Edward. (1968). "Polemic: Industrial tourism and the National Parks" in Desert Solitaire.
- Olson, B. A. (2010). Paper trails: The Outdoor Recreation Resource Review Commission and the rationalization of recreational resources. *Geoforum*, *41*(3), 447-456.

- Simon, G. L., & Alagona, P. S. (2013). Contradictions at the confluence of commerce, consumption and conservation; or, an REI shopper camps in the forest, does anyone notice?. *Geoforum*, 45, 325-336.

Applied:

- Cathcart-Rake, J. (2009). Friends of Yosemite Valley saga: The Challenge of Addressing the Merced River's User Capacities. *Envtl. L.*, *39*, 833.
- Loomis, J. B., & Keske, C. M. (2009). Mountain substitutability and peak load pricing of high alpine peaks as a management tool to reduce environmental damage: A contingent valuation study. *Journal of Environmental Management*, 90(5), 1751-1760.
- Pettebone, D., Meldrum, B., Leslie, C., Lawson, S. R., Newman, P., Reigner, N., & Gibson, A. (2013). A visitor use monitoring approach on the Half Dome cables to reduce crowding and inform park planning decisions in Yosemite National Park. *Landscape and Urban Planning*, 118, 1-9.

Week 10: Presentations

PRESENT on research topic for approx. 15 minutes to the class w/ time for questions

Theme 3: Complexity, resilience, and valuing nature

Week 11: Complex adaptive socio-ecological systems (part I)

Foundational:

- Holling, C. S. (2001). Understanding the complexity of economic, ecological, and social systems. *Ecosystems,* 4(5), 390-405.

Applied:

- Hruska, T. V., Huntsinger, L., & Oviedo, J. L. (2015). An accidental resource: the social ecological system framework applied to small wetlands in Sierran foothill oak woodlands. *General Technical Report PSW-GTR-251*
- Huntsinger, L., Hruska, T., Oviedo, J., Shapero, M., Nader, G., Ingram, R., & Beissinger, S. (2017). Save water or save wildlife? Water use and conservation in the central Sierran foothill oak woodlands of California, USA. *Ecology and Society*, 22(2).

SUBMIT 2nd draft of term - 10 pages w/ topic background and literature review

Week 12: Complex adaptive socio-ecological systems (part II)

Foundational:

- Filotas, E., Parrott, L., Burton, P. J., Chazdon, R. L., Coates, K. D., Coll, L., ... & Putz, F. E. (2014). Viewing forests through the lens of complex systems science. *Ecosphere,* 5(1), 1-23.

- Messier, C., Puettmann, K., Chazdon, R., Andersson, K. P., Angers, V. A., Brotons, L., ... & Levin, S. A. (2015). From management to stewardship: viewing forests as complex adaptive systems in an uncertain world. *Conservation Letters*, 8(5), 368-377.

Applied:

- Higgins, T. L., & Duane, T. P. (2008). Incorporating complex adaptive systems theory into strategic planning: The Sierra Nevada Conservancy. *Journal of Environmental Planning and Management*, 51(1), 141-162.
- Salwasser, H. (2004). Confronting the implications of wicked problems: changes needed in Sierra Nevada National Forest planning and problem solving. In Proceedings of the Sierra Nevada science symposium: science for management and conservation. *General technical report PSW-GTR-193.*

Week 13: Climate change and adaptive management

Foundational:

- Intergovernmental Panel on Climate Change. (2014). *Climate Change 2014: Impacts, Adaptation and Vulnerability - Summary for Policymakers.* IPCC 5th Assessment.

Applied:

- Beschta, R. L., Donahue, D. L., DellaSala, D. A., Rhodes, J. J., Karr, J. R., O'Brien, M. H., ... & Deacon, W. C. (2013). Adapting to climate change on Western public lands: addressing the ecological effects of domestic, wild, and feral ungulates. *Environmental management*, 51(2), 474-491
- Perry, D., & Praskievicz, S. (2017). A new era of big infrastructure? (Re) developing water storage in the US West in the context of climate change and environmental regulation. *Water Alternatives*, 10(2), 437.
- Watson, A., Martin, S., Christensen, N., Fauth, G., & Williams, D. (2015). The relationship between perceptions of wilderness character and attitudes toward management intervention to adapt biophysical resources to a changing climate and nature restoration at Sequoia and Kings Canyon National parks. *Environmental management*, *56*(3), 653-663.

Week 14: Ecosystem services

Foundational:

- Costanza, R., d'Arge, R., De Groot, R., Farber, S., Grasso, M., Hannon, B., ... & Raskin, R. G. (1997). The value of the world's ecosystem services and natural capital. *Nature*, 387(6630), 253-260.
- De Groot, R. S., Alkemade, R., Braat, L., Hein, L., & Willemen, L. (2010). Challenges in integrating the concept of ecosystem services and values in landscape planning, management and decision making. *Ecological complexity*, 7(3), 260-272.

Applied:

- Bagstad, K. J., Johnson, G. W., Voigt, B., & Villa, F. (2013). Spatial dynamics of ecosystem service flows: a comprehensive approach to quantifying actual services. *Ecosystem Services*, 4, 117-125.
- Palomo, I., Martín-López, B., Potschin, M., Haines-Young, R., & Montes, C. (2013). National Parks, buffer zones and surrounding lands: mapping ecosystem service flows. *Ecosystem Services*, 4, 104-116.

Week 15: Cultural landscape values and human well-being

Foundational:

- Gould, R., S. Klain, N. Ardoin, T. Satterfield, U. Woodside, N. Hannahs, G. Daily and K.M. Chan (2015). "A protocol for eliciting nonmaterial values using a cultural ecosystem services frame." *Conservation Biology* 29(2): 575–586.
- Russell et al. (2013). Humans and nature: How knowing and experiencing nature affect well-being. *Annual Review of Environment and Resources*, 38, 473-502.

Applied:

- van Berkel, D. B., & Verburg, P. H. (2014). Spatial quantification and valuation of cultural ecosystem services in an agricultural landscape. *Ecological Indicators*, *37*, 163-174.
- Biedenweg, K., Hanein, A., Nelson, K., Stiles, K., Wellman, K., Horowitz, J., & Vynne, S. (2014). Developing human wellbeing indicators in the Puget Sound: Focusing on the watershed scale. *Coastal Management,* 42(4), 374-390.

Guest Discussant: Alejo Kraus-Polk

Week 16 (Finals week):

SUBMIT paper via email by December 11th at 9:30pm - end of scheduled final exam time