Restoration Ecology - BIOL 5170
CSU Stanislaus, Spring 2017

Meeting Time and Locations
Wednesday 2:00 - 5:50
Friday 11:15 - 12:45
Locations: N210 (or GIS Lab Library-110G; N202; or BioDome)

Instructors
Matthew Cover, Department of Biological Sciences
Office Hours: Th 1-2, F 1-2 in N273
Email: mcover@csustan.edu

Peggy Hauselt, Department of Anthropology, Geography, and Ethnic Studies
Office Hours: Tuesday and Thursday 12:30-1:30 (C-215E), Thursday 3-4 (L-110G)
PHauselt@csustan.edu

Alison McNally, Department of Anthropology, Geography, and Ethnic Studies
amcnally@csustan.edu

"*Here is the means to end the great extinction spasm. The next century will, I believe, be the era of restoration in ecology*." – E.O. Wilson (1992)

"The mainstream environment movement's historical roots in and elevation of conservation, preservation, and wilderness protection were promoted at the expense of other, perhaps more popular, motivators such as health ecology and environmental justice [and] have not taken seriously the deleterious effects of environmental contamination on women, the poor, people of color, and residents of urban areas [T]he mainstream movement could be reinvigorated by contemporaneous attention to health ecology, environmental justice, and ecological restoration, all of which remain on the borders of the movement, and all of which have ample precedent within the sidelined history of American environmentalism."
–C.R. Palamar (2008)

Course Description

Human activities have greatly altered natural landscapes and ecosystem processes at local and global scales, including climate disruption, extinctions, ecosystem transformation, and pollution. This course provides an introduction to the principles of restoration ecology, a field that aims to assist in the recovery of altered or degraded ecosystems. Restoration ecology is a relatively young academic discipline (although people have been "restoring" ecosystems for millennia), and there are many theoretical and philosophical differences among its practitioners. Course readings and discussions will relate the philosophy and practice of ecological restoration to a wide range of potential applications and ecosystem types, with a focus on issues relevant to California. There will be a roughly even balance between theory (readings and discussion) and applied topics, including analysis of restoration plans and projects, as well as a class project to engage in working with community members to help develop a restoration plan. This course will focus on the

Student Learning Objectives

After successfully completing this course, you will be able to:

1. Critically analyze the design and practice of ecological restoration projects, identifying the ecological theories, goals, and philosophies and worldviews of projects and practitioners, as well as suggesting alternative approaches.
2. Describe how ecological restoration is related to other approaches of environmental conservation and management.
3. Articulate and your own philosophy of ecological restoration and contrast it with alternative approaches.
4. Work collaboratively, constructively, and respectfully with other restoration practitioners to develop restoration plans.

Readings

Most readings will be bundled in a course reader. Additional readings or resources may be assigned in electronic or paper format.

Activities and Evaluation

<u>1. Reading, Reading Notes, and Group Discussion (25% of grade)</u>

Essential to this course is the critical and deep reading of texts and articles. It is of the utmost importance that graduate students engage deeply with readings. This means not just reading for conceptual understanding, but asking the tough questions, making connections, and synthesizing information. Our goal is to push each other to develop a holistic understanding of the field of restoration ecology, and to learn from as many voices and practitioners as we can in order to develop a range of "toolkits" for designing solutions to environmental problems.

You should actively read each assigned piece, meaning take notes, write in the margins, take time to think. At the end of each reading we have included a blank page for notes, as well as a series of reading questions designed to prompt your deep analytical thinking about the texts. You should come to class with written notes on each assigned reading, and be ready to share your thoughts with the class. The instructors will take note each day of the level of preparedness of each student.

2. Essay 1: Compare and Contrast (15%)

A 3 page (double-spaced, 12 pt. TNR font, 1" margins) analytical essay where you will compare and contrast the approaches/worldviews/philosophies described in two or more readings.

3. Project Analysis (15%)

A 5 page analytical essay that dissects some aspect of a real-life restoration project or plan. Identify a project that interests you, perhaps something that is relevant to your thesis topic or a site you are familiar with, and examine outside sources of information (plans, reports, media accounts, studies, etc.) about the project. Critically analyze the design and practice of the project, identifying the ecological theories, goals, and philosophies/worldviews of the project and practitioners, as well as suggesting alternative approaches. This project is due after Spring Break; you are encouraged to visit the site to make first-hand observations if at all possible.

4. Essay 2: My Philosophy of Restoration(15%)

A 3 page narrative essay where you outline your own philosophy of restoration or some aspect of restoration, comparing and contrasting your ideas with those from the readings.

5. Class Project (30%)

We will discuss the specifics of the class project early in the semester, including our specific goals and tasks. The class will work together to carry out the project, but each student will be evaluated on their contribution to the overall project.

Schedule of Activities

*It is very likely, almost certain in fact, that this schedule will change. We will communicate changes to you in class, and have made space in the schedule to write in changes.

**Listed readings indicate the day we will discuss the reading in class.

F 1/27 Introduction

W 2/1 Conventional Definitions

SER Restoration Primer (2004)

Higgs, Nature by Design, Chapter 3: What is Ecological Restoration? (2003)

F 2/3 Conservation Crisis

Kareiva and Marvier, What is conservation science? (2012)

Miller, Soule, and Terborgh, New conservation or surrender to development? (2014)

Tallis and Lubchenko, A call for inclusive conservation (2014)

W 2/8 Understandings of Nature I

Minteer and Pyne, Restoring the narrative of American environmentalism (2013)

Martinez, Protected areas, indigenous peoples, and the western idea of nature (2003)

Harper, When black men go into the forest, they don't come back out (2010)

Cole et al., Naturalness and beyond: protected area stewardship in an era of global environmental change (2008)

F 2/10 Understandings of Nature II

Woelfle-Erskine and Cole, Transfiguring the Anthropocene: stochastic reimaginings of human-beaver worlds (2015)

W 2/15 Indigenous and Native Perspectives on Restoration and Research I
Hodgson-Smith and Kermoal, Community-based research and Métis women's knowledge in northwestern Saskatchewan, Chapter 6 in Living on the Land: Indigenous Women's Understanding of Place (2016)
TallBear: Standing with and speaking as faith: a feminist-indigenous approach to inquiry (2014)

F 2/17 Indigenous and Native Perspectives on Restoration and Research II
Cronin and Ostergren, Tribal watershed management: culture, science, capacity, and collaboration (2007)

W 2/22 GIS Lab- Investigating the Watershed Context
Essay #1 Due at beginning of class.

F 2/24 Restoration Theory
Palmer et al., Ecological theory and community restoration ecology (1997)
White and Whittaker, Approximating nature's variation: selecting and using reference information in restoration ecology (1997)

W 3/1 Restoration Planning
Harling and Tripp, Western Klamath restoration partnership: a plan for restoring fire adapted landscapes (selected portions) (2014)
Mattole Integrated Coastal Watershed Monitoring Plan (selected portions) (2009)
Skype with stakeholder?

F 3/3
Placing Restoration
Tomblin, The ecological restoration movement: diverse cultures of practice and place (2009)
Palamar, The justice of ecological restoration: environmental history, health, ecology, and justice in the United States (2008)

W 3/8 Field Trip #1
Note: we will return to campus late, ~7pm

F 3/10 Discussion of field trip, class project
[Matt at Student Research Competition]

W 3/15 Reading Discussion, then Class Project work day (GIS, field methods)
Higgs, Nature by Design, Chapter 5: Denaturing Ecological Restoration? (2003)

F 3/17 Class Project discussion
Objectives and planning

[Spring Break]

W 3/29 Project Analysis Due. Restoration Monitoring and Success
Golet et al., Successes, failures, and suggested future directions for ecosystem restoration of the middle Sacramento River (2013)
Palmer et al., Standards for ecologically successful river restoration

F 3/31 [No class, Cesar Chavez holiday]
Read up on field methods

W 4/5 Non-native Species
Schlaepfer et al., The potential conservation value of non-native species (2011)
Vitule et al., Revisiting the potential conservation value of non-native species (2012)
Schlaepfer et al., Toward a more balanced view of non-native species (2012)
Shackelford et al., Finding a middle ground: the native/non-native debate (2012)
Estevez et al., Clarifying values, risk perceptions, and attitudes to resolve or avoid social conflicts in invasive species management (2014)

F 4/7 Novel Ecosystems
Perring et al., Incorporating novelty and novel ecosystems into restoration planning and practice in the 21st century (2013)

W 4/12 Discuss and Test Field Methods
Schaefer and Tillmanns, Listening to ecosystems: ecological restoration and the uniqueness of a place (2015)

F 4/14 Final preparations for Field Trip
Handel, The seven habits of highly effective people who want to do ecological restoration (2016)

Saturday 4/15- Class Field Trip

W 4/19 Post-field-trip
Discussion, data entry, analysis, next steps
Langridge, Social and biophysical context influences county-level support for collaborative watershed restoration: case study of the Sacramento River, CA, USA (2016)

F 4/21 It's Good to Step Back And Consider
Tuck and Yang, R-words: refusing research (2014)

W 4/26 Class project work

F 4/28 Class project work
[CGS Meeting- Peggy and Alison gone; Statewide SRC- Matt gone]

W 5/3 Essay #2 Due
Share essays

F 5/5
Broeckhoeven and Cliquet, Gender and ecological restoration: time to connect the dots (2015)

W 5/10

F 5/12

W 5/17 Last class

Reading Questions

1. What is one direct quote that resonates with you? Why?

2. What from the reading stays with you? After you put the reading down and go for a walk, or the next day, what particular points or examples do you remember?

3. What are the major concepts, findings, or take-home points of the reading? What are the 2-4 most important over-arching concepts?

4. Identify and describe a connection between this reading and another reading we have done for the class.

5. What from this reading can you apply to your own research (either your thesis or this class)? It could be a method, an important concept or finding, etc.